

**CELLPHONE, EMAIL, AND TEXT-MESSAGING AND PATIENT-PHYSICIAN
COMMUNICATION IN PRIMARY CARE**

by

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Abstract

Patient-provider communication is an important aspect of quality of care and poor communication is a frequent problem. Evolving communication technologies can create new problems as well as offer opportunities for addressing them. It is not known how providers choose among available technologies, decide who of their patients to communicate using such technology, or how use influences patient satisfaction.

This thesis addresses these questions in three aims, incorporating a survey of primary care providers on their communication patterns, the linkage of survey results with existing patient-reported data, and qualitative interviews with primary care physicians on their experiences with favorite patients.

In Aim 1, I found that while more providers had used their cellphones than email to communicate to patients (54% vs. 38%, $p=0.03$), they were more inclined to give their email addresses than cellphone numbers (56% vs. 37%, $p<0.001$). Academic providers and providers who gave patients their email addresses were more likely to communicate with their patients electronically than community providers and those who did not give email addresses, respectively.

In Aim 2, multivariable regression analyses revealed that making email addresses available to patients by non-pediatric providers was associated with a 19-point difference in overall satisfaction but not individual satisfaction domains. The offering of a provider email address is a signifier of a strong patient-provider relationship. The use of cellphone, email, and text-messaging was not associated with satisfaction.

In Aim 3, I found that favorite patients are often not like their physicians in socio-demographic and personality characteristics. Cellphone numbers were privileged by physicians and when given, only to a few patients whose illnesses warranted having direct access; email addresses were given more often, especially when the patient was a fellow physician or employee of the same medical institution. Some favorite patients fell into these categories; others did not.

These findings suggest the need for institutional guidelines that establish expectations and boundaries in communicating with patients outside of the office.

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Chapter 1: Overall Aims and Literature Review

Overall Aims: The Importance of Patient-Provider Communication

Patients want timely information and high quality healthcare from their doctors. The technical term that captures this objective is ‘patient satisfaction.’ One important aspect of patient satisfaction is the ability to communicate with doctors at times other than the in-person visit. Yet while excellent provider-patient communication is essential to high quality care, poor communication is a frequent problem¹. Evolving technologies and patterns of communication create new problems as well as offer opportunities for addressing them. Email capability, for example, can expand patient access to their providers at times most convenient for them, but are also less personal than face-to-face or telephone communications. In addition, emails may go unanswered by providers who are too busy or who have not taken up new communication methods. It is not known how providers choose among available communication technologies, how providers decide who of their patients to communicate with using novel technologies, or how use of these technologies influences patient satisfaction.

This thesis addresses these questions via three aims. Aim 1 characterizes healthcare provider use of cellphones, email, and text-messaging to communicate with their patients, as well as their attitudes and concerns regarding such use. Aim 2 determines whether use of these communication technologies is associated with patient-reported satisfaction. Aim 3 examines what effects, if any, the ‘favorite patient’-physician bond has on how physicians communicate with their patients and practice medicine. In addressing these

aims, this mixed method thesis incorporates the results of a survey of primary care providers on their communication patterns, the linkage of those survey results with existing patient-reported data, as well as qualitative interviews with primary care physicians on their experiences with favorite patients. The thesis takes a healthcare policy perspective and will consider the implications of these aims for patients, physicians, and healthcare institutions.

Literature Review

Aim 1: The Patient-Provider Communication Problem

In spite of what is known about the factors that influence patient satisfaction with patient-provider communication²⁻⁶, patient-provider communication is not always what it should be⁷. Patients often have a hard time understanding their providers, who often use technical language when they communicate⁷. Providers also often fail to discuss chronic disease treatment, and often do not appreciate their patients' health priorities^{7,8}. Communication problems like these can diminish both patient satisfaction and other health outcomes⁹. This is notable since communication is often worse with patients with poor health^{7,8}. The use of cellphones, email, and text-messaging have been suggested as a partial solution to these problems¹⁰. Since they can be more convenient than traditional telephone communications, they have the potential to increase patient access and improve relationships with providers outside of the clinic setting. Yet, while 85% of Americans own cellphones and 52% gather health information on their phones, there is limited literature on provider use of such technologies, particularly cellphones and text-messaging, to communicate with patients¹¹.

Novel Communications Technology

Much of the classic literature on patient-provider communications has centered on how and what patients and providers say to each other during face-to-face encounters. Yet healthcare communications often occur outside of such interactions¹²⁻¹⁵. Cellphones, email, and text-messaging are three important tools that patients and providers can use to communicate after their initial meeting.

The use of cellphones, emails, and text-messaging differ from in-person communications and traditional “landline” communications because of the two opportunities offered by these “asynchronous” communication technologies^{10,16}: constant access and controlled response. Asynchronous communication takes place when the communicator and recipient are not simultaneously present; these three novel technologies exist on a continuum of those opportunities¹⁰. While synchronous communication can occur using a cellphone, they also expand both (caller) access and (respondent) control. Unlike traditional landline telephones, cellphones are by definition mobile and can travel with its user, opening up access for callers to theoretically reach the user anywhere and anytime. With a provider’s cellphone number, patients are not constrained by a provider’s geographic relationship to his or her office or home. Yet with cellphone voicemail, caller ID, and other features common to cellphones, this unfettered access also allows provider control. Providers do not need to answer right away and can adjudicate when and how they want to respond to their callers. Emails and text-messaging work in much the same way and all three technologies can overlap with one another on computers, tablets, and phones, within and outside of health information technology systems the clinics may

have in place. Both providers and patients cite this control feature and the ability to compose responses on their own time as a strength of asynchronous communication, commenting, for example, “Using e-mail at work gives me a chance to concentrate on what I want to ask the doctor,” and “I feel that if the email service was taken away, the patients would suffer”¹⁷.

Barriers to Novel Technology Adoption—Personal

There appears to be a gap between patient desires for using novel technologies to communicate with their providers and provider interest in such technologies. Much of the disconnect between patient and provider interest, and actual use of cellphones, emails, and text-messaging for patient-provider communication, stems from provider reluctance to engage in such technologies. The reluctance is shaped by professional concerns as well as personal experience of the technology. One major deterrent is the amount of time (actual or perceived) required of communicating with patients using cellphones, email, and text-messaging¹⁸⁻²². On average, primary care providers spend half an hour per day outside of office time communicating with patients, staff, and other providers²³. Many want to be compensated for the time they spend communicating with patients and many reported that their use would increase if they were reimbursed for the time²⁴⁻²⁶. Concern for negative consequences associated with the use of novel technologies is another deterrent. Confidentiality breaches^{24,27-30}, misinterpretation of messages by patients, and system failures that would impede communication were all cited as major provider concerns, though researchers note that many of these deterrents are anticipated challenges, rather than negative consequences actually experienced by providers using novel technologies^{20,22,28}.

Barriers to Novel Technology Adoption—Government

Beyond personal perceptions and experiences, perhaps the most significant deterrent to the widespread provider use of cellphones, emails, and texting to communicate with patients is the perceived threat of penalties from the Health Insurance Portability and Accountability Act (HIPAA)^{27,31,32}. HIPAA concerns may also underlie much of the disconnect between provider use of novel technologies and institutional policies on how providers use these technologies. First enacted in 1996, HIPAA protects patient privacy by setting standards on how individually identifiable information can be shared (the ‘Privacy Rule’), the security safeguards providers have to protect electronic health information (the ‘Security Rule’), and the circumstances when patients are notified of security breaches (the ‘Breach Notification Rule’)³³. HIPAA does not endorse or discourage the use of any mode of communication; the use of cellphones, emails, and text messaging are not expressly discussed³⁴. Rather, the Security Rule of the Act requires covered entities (i.e. healthcare providers, health plans, and healthcare clearing houses) to provide ‘adequate safeguards’ in the use of these technologies. HIPAA safeguards require secure transmission of information so that it is only read by the intended recipient. Providers who use cellphones, emails, and text-messaging to communicate with their patients would be in violation of HIPAA if they shared patient health information with someone other than the patient without their permission, were not able to demonstrate data security, or failed to notify patients of a data breach. Importantly, for providers and their institutions in violation of such rules, intentional or otherwise, HIPAA may enact financial penalties.

Barriers to Novel Technology Adoption—Healthcare Institutions

While federal regulations are technology neutral, many private organizations interpret the latitudes of the regulation differently and respond with policies of their own to ensure that members do not violate HIPAA and other institutional concerns. Because of their smaller size and scope than the federal government, these organizations may be more adaptable to social changes and able to enact policy updates more frequently than regulators; many have specific regulations pertaining to provider use of cellphones, emails, and text-messaging to communicate with patients. These regulations are sometimes more narrowly defined and restrictive than HIPAA itself. Unlike HIPAA, however, violators often see little to no punishment and the penalties of violations are not clearly stated in the policies. Furthermore, provider awareness of the policies is perceived to be low (personal correspondence, Johns Hopkins Hospital HIPAA counsel, 2014).

For example, at Johns Hopkins Hospital (JHH), the organization's email guidance corresponds to HIPAA in indicating that email communication between providers and patients, even through unsecured platforms, does not have to cease. However, providers must adhere to a list of strict requirements in order to do so, including obtaining patient approval, verifying the correct address is used, sending only the minimum amount of personal health information necessary, and including an institutional warning and disclaimer regarding HIPAA policies. For text messaging, the institution deviates from HIPAA and sets policies based on the circumstance and content of the texts. Johns Hopkins Risk Management permits the use of text messaging to send

appointment and medication reminders and confirmation, provided that those messages are in line with guidance on emails and voicemails. No other uses are permitted. Yet guidelines “are not regularly policed” and carry no penalties for violations (personal correspondence, JHH Medical Affairs, 2014).

Aim 2: Patient-Reported Satisfaction as a Measure of Quality

Patient-reported satisfaction with their providers is the primary outcome in Aim 2. While patient satisfaction is a measure of a patient’s perspective, it can also serve as a proxy for the level of patient centeredness of a healthcare provider or institution³⁵. Such an assessment is crucial because of the importance of the patient perspective—measured by patient reported outcomes—in achieving high quality healthcare, as detailed by the Institute of Medicine report *Crossing the Quality Chasm*^{35,36}. Although some differentiate the terms ‘patient satisfaction’ from ‘patient experience’³⁷, this aim follows the example of studies that use the terms interchangeably— thus patient satisfaction with provider access and communication with providers is used for how favorably patients rate their experiences with accessing and communicating with their providers. The value of the patient perspective, and this measure in particular, can be seen in the commitment of organizations such as the National Committee for Quality Assurance and the American Board of Medical Specialties in endorsing and requiring surveys of patients’ experiences of care³⁵. Most significantly, the Affordable Care Act (ACA) has mandated the use and reporting of patient-centered assessment³⁸. In practice, providers seeking payment from the CMS through performance payments, including the Physician Quality Reporting System, which are required to collect and report patient experience surveys as of 2013³⁸. The Consumer Assessment

of Healthcare Provider and Systems (CAHPS) survey is one of the most widely used in the US, and the chosen instrument for CMS demonstration programs to measure patient satisfaction³⁹. The CAHPS survey will be used as the primary measure of patient satisfaction for the analysis.

Drivers of Patient-Reported Satisfaction with Patient-Provider Communication

There are many factors that affect patient-reported satisfaction of their communications with their providers^{2-5,40-42}. Prominent among the drivers of satisfaction are the quality of the patient-provider relationship and patient access to their providers (e.g. whether patients can reach their providers as needed). While the content and tone of patient-provider communication are also important^{2,4,6,40}, the present work will focus on patient-provider access and relationship in the primary care setting. Patients look for rapport and trusting relationships with their providers^{40,42}; they also value access to providers¹². It has been suggested that gestures that demonstrate having access, such as being given a provider's email address (even without using it), can improve patient satisfaction².

Aim 3: The Science of Liking and Attraction

Given the importance of the patient-physician relationship in patient satisfaction with communication, the patient-physician relationship is examined in detail in Aim 3.

Liking

It is human nature to like some people more than others and to work better with some people than others. Our affinity and preferences for some people and not others are manifest in the friendships, personal relationships, and even political affiliations⁴³⁻⁴⁶. A host of factors determine why people like

some more than others, from how much they are liked⁴⁷, to similarities⁴⁵, and culture⁴⁶. People are attracted to people who are most like them in friendships and romantic relationships^{43,45}, yet these same traits need not be present for an effective working relationship. In studies of pairs of engineering students, for example, personality combinations did not appear to be significantly related to levels of communication, satisfaction, confidence, and compatibility^{48,49}.

Countertransference

Countertransference is a psychoanalytic concept that describes therapist reactions to challenging clients and can serve as a conceptual guidepost into examinations of physician reactions to favorable patients. The term is defined as “the therapists’ reactions to clients that are based on therapists’ unresolved conflicts⁵⁰.” A therapist with unresolved anger, for example, may be easily annoyed by things a client says. The impact of countertransference on the therapist could be internal (i.e. affective and cognitive) and have little impact on the client or external (i.e. behavioral) and evident to the client⁵⁰. If unchecked, therapists could become disengaged or hostile with their clients⁵¹. While there is little empirical guidance on managing countertransference reactions with clients, research does suggest that therapists who attend to their unresolved conflicts and those who are cognizant of their own countertransference reactions are best able to minimize those reactions to their clients^{50,51}.

The Hateful Patient

In the clinical setting, the challenging patients that can invoke countertransference have been described as “hateful” or “heart-sink” patients. The term ‘hateful patient’ was first coined by JE Groves in 1978⁵². Strous et al re-examined the term in 2006 for the 21st century context and found the

archetypes: the dependent clinger, the entitled demander, the manipulative help rejecter, and the self-destructive denier still true to modern medical practice, albeit with the dependent clinger broaching boundaries via email, for example, rather than telephone^{52,53}. Beyond these archetypes, O'Dowd et al found that definitions of 'heart sink' patients to differ by physician sex and practice location, suggesting, as with countertransference, the bi-directional nature of poor patient-physician relationships. Despite the many reasons why a patient may be deemed especially challenging, their effects on physicians on similar: these patients engender feelings of anger, exasperation, and frustration⁵³⁻⁵⁵.

VIP Syndrome

While countertransference and the hateful/heart sink patient offer models of the opposite extreme of favorite patients, the notion of 'VIP patients' offers an analogue to favorite patients and its literature illustrates the potential dangers of the favorite patient-physician relationship. VIP syndrome, described by A. J. Block as when the (social) status of a patient affects decisions of that patient's care and leads to deviations from routine practice⁵⁶. This could be manifested either by avoiding procedures that could cause the patient discomfort or adding on unnecessary tests as extra precaution⁵⁶. In either scenario, the VIP patient could receive substandard care. Patients like other physicians, family members, and friends could all be considered 'VIP'⁵⁷. As with countertransference, a physician's self recognition of the VIP syndrome helps to reduce its effects, as do drawing clear boundaries of the types of patients physicians treat (e.g. no family members) and how patients are treated⁵⁷.

Chapter 2: Doctor, What's your email address? Cross-sectional survey results on use of cellphone, email, and text-messaging in primary care

Abstract

Importance: The way patients and provider communicate with one another outside of the clinic is changing as communication technologies evolve. Little is known about how communications are occurring in clinical practice or what providers think about these communications.

Objective: Characterize provider use and concerns about cellphone, email, and text-messaging to communicate with patients, and provider patterns of communication.

Design & Setting: A 16-question cross-sectional survey of provider communication behavior in the year prior to clinic implementation of a new electronic health record system with secure patient-messaging capabilities

Participants: 182 Mid-Atlantic primary care providers in community and academic practice.

Main Measures: Provider use of cellphone, email, and text messaging; provider concerns regarding electronic communication, and other communication behaviors.

Results: The response rate to the survey was 58%. While more respondents had used their cellphones than email to communicate to patients (54% vs. 38%, $p=0.03$), providers were more inclined to give their email addresses than cellphone numbers (56% vs. 37%, $p<0.001$). Academic providers and providers who gave patients their email addresses were more likely to communicate with their patients electronically than community providers and those who did not,

respectively. Four percent of respondents used text-messaging. Many providers had concerns regarding communication with patients outside of the clinic, most commonly about a patient's understanding of the message and potentially missing an urgent patient message (86% and 81%, respectively).

Conclusion and Relevance: A small proportion of providers used email or text-messaging to communicate patients and few providers encouraged electronic communications. In an area where patients seem to be willing to engaged, a better understanding of provider concerns and behaviors in patient-provider communication would better encourage patient involvement.

Background:

Although excellent provider-patient communication is essential to high quality care, suboptimal communication is a frequent problem¹. Patients and providers often misunderstand one another and do not communicate as frequently as they should²⁻⁴. Insufficient communication has been shown to diminish both patient satisfaction and adherence^{5,6}. This is even more noteworthy since communication is often worse with patients with poor health^{2,3}. The means by which patients and providers communicate are changing. The use of cellphones, email, and text-messaging have been suggested as a partial solution to communication problems⁷. They are perceived to be more convenient than traditional telephone communications, and have the potential to increase patient access and improve relationships with providers. Yet, while 85% of Americans own cellphones and 52% gather health information on their phones, there is little published research on provider use of such technologies, particularly cellphones and text-messaging, to communicate with patients⁸.

The use of cellphones, email, and text-messaging to communicate with patients is not without risks. Foremost among these is the perceived threat to physicians of penalties from violations of the Health Insurance Portability and Accountability Act (HIPAA)⁹⁻¹¹. HIPAA is neutral to communication modality, and does not forbid or encourage provider use of cellphones, email, and text messaging. It requires instead that healthcare organizations and providers apply 'adequate safeguards' in electronic communications, and many organizations discourage such patient-provider communications to prevent HIPAA violations. Accordingly, institutions have also imposed strict

requirements for electronic communication use, including requiring patient approval, verifying that the correct address is used, sending only the minimum amount of personal health information necessary, and including an institutional warning and disclaimer regarding HIPAA policies within messages.

While patients may want to take advantage of the increased access and convenience of cellphones, emails, and text-messaging to communicate with their providers, providers are also wary of the unbounded access that cellphones, emails, and text-messaging could bring¹². The uncompensated time providers could spend communicating with patients outside of the clinic has been cited as a concern¹³⁻¹⁵. There are also concern over missed messages and patient misunderstanding of messages conveyed via email or text message¹⁶.

Thus, providers face competing forces. Patient demand for providers to use novel technologies to communicate with them is opposed by institutional reluctance for adoption. However, little is known about how communications are occurring in clinical practice or what providers think about these communications. This study seeks to describe how providers use novel technologies to communicate with ambulatory patients and the provider characteristics associated with such use. It examines how providers who use novel technologies may differ from those who do not and compares communication patterns at a large community practice with an academic practice. We hypothesized that providers would be more willing to provide email addresses to patients than cell phone numbers, that younger providers may be more willing to use email and text-messaging, and that providers in academic practice may use email and text messaging more frequently than those in community practice because they see fewer patients and have less

productivity pressures^{17,18}. We designed a provider survey to understand provider motivations, concerns, and patterns of use for cellphone, email, and text messaging to communicate with patients.

Methods:

Study Sample

The study sampled a large, primary care practice in the Mid-Atlantic region (“Community Practice”) and primary care providers associated affiliated with an academic medical center in the region (“Academic Practice”). All primary care providers with a 2012 satisfaction survey score who were still at the practice (73% of Community Practice and 79% of Academic Practice) were surveyed. The satisfaction inclusion criteria was set for a related project separate from the aims of this study.

At the time of the survey, the Community Practice had 26 primary care sites in diverse geographic locations throughout the region. Sixty-eight percent of these providers were female and 40% were non-white. The patient population was diverse and reflective of the general population in the mid-Atlantic region. At the Academic Practice, 46% of providers were female and 27% were non-white.

Measures

The cross-sectional survey of primary care providers examined their modes of communication with patients. The 16-question survey collected limited demographic information as well as information on provider communication behaviors, such as providing email addresses to patients, and

concerns regarding using cellphones, email, and text messaging to communicate with patients (**Appendix 1**). Provider behavior was assessed using 5-point Likert-type scales that ranged from “Never” to “Always.” Provider attitudes were assessed with scales that ranged from “Not important at all” to “Very important ^{19,20}.” The survey also asked providers about the types of patients they were most likely to email, types of information recorded in electronic communications, and other communication behaviors. The survey focused on providers’ practice from the spring of 2012 to spring of 2013 (the year immediately prior to implementation of a new Electronic Health Record (EHR) system in the clinics). The survey was constructed iteratively by the research team and pilot tested with 15 providers and experts in provider communication to solicit feedback, refine questions, and assess face validity.

Data Collection

The eligible population of 149 primary care providers (i.e. physicians, nurse practitioners, and physician’s assistants in internal medicine, family medicine, and pediatrics) were invited to participate and sent a link to a web survey via email in the spring of 2014. Non-respondents received the survey up to three times, including a paper copy in the second wave. No financial incentives were provided.

Data Analysis

Descriptive analyses were performed to explore the results of the communication survey. Provider patterns of use, attitudes, and concerns were tabulated; T-tests and chi-square tests were used to test the significance of hypothesized differences in behaviors and attitudes between users and non-users of cellphone, email, and text-messaging, as well as between the

community and academic practices. Multivariable logistic regressions examining provider characteristics associated with use of cellphone and email, with use as the dependent variables and provider characteristics as the independent variables. Analyses were conducted using the data analysis and statistical software Stata (StataCorp Version 12, College Station, TX).

Results:

Provider communication outside of the office

Of the 182 providers invited to join our sample, 106 (58%) responded to the survey. Asked about time spent communicating with patients outside of the clinic each week, 63% percent of providers said that they spent 0-5 hours each week communicating with patients outside of clinic hours; the remainder communicated more than 5 hours each week. Of the different modalities available to communicate with patients, cellphone use was the most prevalent. More than half of providers (54%) reported using their cellphones, 38% used email, and only 4% used text messaging in the previous year. Despite the prevalence of cellphone use by providers, most did not provide their cellphone numbers to any patients; 56% gave their email addresses in the last year while only 37% provided their cellphone numbers ($p < 0.001$).

The Email Motivation

Seventy percent of providers responded that they would reply to a patient via email if they were first emailed by the patient. Following patient initiative, the patient's status as an employee within the same institution and an existing personal relationship with the patient (e.g., a friend) were the second and third most popular patient characteristics that motivate providers to email their patients. Only 26% of respondents said they would email their patients if they needed close monitoring and 22% said they would email their patients if they were copied on a correspondence from a different provider to the patient. Twelve percent reported they would never use email, regardless of patient circumstances. The 12% who would never use included community and academic providers of both sexes and varying age groups and specialties. Of

providers who used email, 81% (47/58) said they would record a summary of the communication in the medical record.

Communication Concerns

The providers expressed concerns about many aspects of communications with patients. Figure 1 illustrates the respondents' perceptions of the importance of various aspects of communications, the greatest of which were driven by interactions between providers and patients on email. Eighty-one percent of respondents were very concerned that the patients might not understand the email messages, and 82% were very concerned that they might miss an important message from a patient. Seventy-five percent of respondents were also very concerned about the added time burden of communication.

Correlates of Use

Provider year of graduation, sex, and specialty were also not significantly associated with provider use of communication technologies in logistic regression analysis examining use of cellphone and email as outcomes (**Table 2**). However, practicing in the academic setting and providing patients with contact information were. The odds of providers using email to communicate in providers who gave their email addresses to patients were 18.35 times that of providers who don't give their email addresses ($p < 0.001$); the odds of using email among academic providers was 6.64 times that of community providers ($p = 0.034$). For cellphone use, the only variable significantly associated with cellphone use was whether a provider gave out his or her cellphone number to patients (OR 19.20, $p < 0.001$). Regression analysis was not performed on text-messaging because too few respondents used it. There was no statistically

significant difference in use of email between providers who spend less or more time communicating (30% use among those who communicate 0-5 hours vs. 21% use among others, $p=0.47$).

Anticipated Use of Technology with EHR-Enabled Secure Messaging

About a third of the respondents said that with new EHR-enabled secure messaging system, they would cease use of non-secure email, including those who would never used email. Nearly 20% of respondents said they would continue to use email, whether for convenience, personal preference, or to reply to patients already using email while a few remained open to text-messaging. Many respondents mentioned transitioning patients onto the secure EHR system as substitution for cellphone, email, and text messaging though a few were also distrustful of secure messaging.

Discussion:

This study on provider communication patterns revealed that most community primary care providers do not use email to communicate with patients, though many give their email addresses to patients. Text-messaging patients was rarely reported. For providers, the decision about whether to email patients appears to be decided largely by the behavior of patients and their relationship with providers, rather than by health condition, or any provider characteristics. Academic providers were more likely to email their patients than their community counterparts. Beyond that provider characteristic, neither provider age, sex, nor specialty were significant associated with a provider's use of cellphone and email to communicate with patients.

This study is unique because of the depth of its considerations in how providers communicate. The study provides new information on physician use of new tools in patient-provider communication, their concerns over such use, and behaviors associated with use. The survey included questions not merely on whether providers use novel communication technologies, but how they communicated, allowing a nuanced description of patient-provider communication. While email use to communicate with patients has increased over time, the added and uncompensated time burdens of email communication remain barriers to greater adoption, even as patient demand is a facilitator for provider use²¹. While settings and systems may differ, HIPAA concerns, payment models, time burden, and coverage for potentially missed emails are barriers in many settings, from the community physicians in this analysis to the early adopters at Kaiser Permanente Northern California²².

Still, a number of providers use unsecured email to communicate with patients. Research on the patient behavior has shown that interest in using email to communicate is far greater than actual use— Kagan et reported in 2005 that while one in three surveyed surgery patients expressed interest in emailing their physicians, only 10% did so¹⁶; Singh et al found reported in 2009 that among older patients, 49% were interested in emailing their physicians but only 1% did so¹³— the results of this survey demonstrate similarly low use and high willingness among physicians, especially if their patients contact them first on email. From the patient’s point of view, these results are encouraging given studies establishing that patients are interested in using email to communicate and willing to take the initiative to engage in health discussions with their providers²³. They indicate that providers are willing or feel obliged to reply to their patients using email, even if it is not their preferred mode of communication. This practice runs counter to institutional guidelines at many hospitals and professional societies requiring physicians to obtain prior patient consent before engaging in email communications with patients^{24,25}. These guidelines may be out of step with how some providers practice. Alternatively, provider practices are out of step with guidelines and regulations. More efforts are needed to align institutional guidelines and clinical practice.

Few providers appear to actively encourage electronic communications or gave out their contact information to patients; those that did favored email addresses over cellphone numbers. This reluctance was perhaps driven by concerns about boundaries on patient access and protecting their private time. These results differ from the findings of Peleg et al, who found that primary care physicians in Israel preferred giving out cellphone numbers over email

addresses²⁶. However, provider concerns are similar in both studies. Cellphone numbers represent a greater intrusion on private time since emails could be answered according to the providers' own schedule, yet emails could be more open to misrepresentation. These findings suggest the need for provider guidelines that establish expectations and boundaries in communicating with patients outside of the office. Peleg et al's finding that respondents thought providers might be more motivated to provide a number if a cellphone was provided or paid for also suggest having separate 'work' cellphones may help providers preserve boundaries while expanding patient access²⁷.

Contrary to our initial hypothesis, neither provider year of graduation (a proxy for age and years in practice), sex, nor specialty were significantly associated with cellphone and email use. These results suggest that other unmeasured variables— perhaps personality, environment, or patient characteristics, may explain why providers within the same system may have different approaches to communicating with patients outside of the clinic. Academic providers appeared more willing to use email to communicate with patients, provided their contact information more often, and were less concerned about barriers to electronic communication. These differences are consistent with prior findings and could be attributed to the fact that emails are more integrated into the routine of academic practitioners and that academic physicians have fewer patient care sessions and thus less patient productivity pressures^{17,18}.

The study has several limitations. First, the communication survey asks providers to recall their communication practices nearly a year ago. Although this raises a concern for response biases (e.g., telescoping whereby respondents

recalling an event in the past as occurring more recently, that is, within the time frame in question, than had occurred), providers tend to be slow to change their practices, especially in the absence of payment changes^{28,29}. Thus, the survey should still be reflective of their behavior. There is also concern whether the 42% non-respondents of the survey may have different practice patterns than the respondents and that their communication patterns are not captured by this study. The patient satisfaction scores and sex breakdown of respondents and non-respondents were not found to be statistically different; more detailed data on other provider characteristics, like age, were not available. A second limitation was that the study sample was limited to two primary care practices in one region of the country, and that the providers in these practices were employees and not independent owners in their practices. The habits by providers in these two practices may not be generalizable to those in other practices or states.

Although the limited sample is a limitation to the study, the choice of the primary care practices was also a strength. By surveying a large primary care practice in the region—a practice with great geographic and socio-demographic diversity—the findings of the study are likely to be generalizable to other regional providers with similar demographic composition.

The findings of this study have several implications. This study found that even physicians reluctant to use email would do so if prompted by their patients. For patients, these findings suggest the power of patients in patient-provider communications and that patients interested in emailing their providers should do so rather than waiting for providers to offer the service, because few physicians will. They also illustrate the many legitimate concerns

providers have regarding relying on email as a mode of communication. For providers, this research and the shift to secure-messaging suggest that patient use of electronic communication will likely increase in the coming years. Providers will soon need to figure out how best to communicate and deliver care electronically and overcome concerns regarding time, boundaries, and patient understanding. For healthcare institutions such as hospitals or professional societies like the American College of Physicians, these findings highlights two areas—email regulations and communication boundaries— where more balanced policies may be needed. They also suggest that more encouragement and institutional support are needed to address provider concerns about, as well as potential patient demand for, using cellphone, email, and text messaging to communicate. Insurers and policymakers should consider compensation models that would encourage providers to expand patient access outside of the office setting. This could have the dual benefit of providing patients with more timely information and reducing health care costs. For healthcare researchers, this paper provides a useful insight into provider motivations and behaviors in patient-provider communications. The results could help to inform evidence-based recommendations for more effective modes of communication. The study also points toward several areas of future research and highlights. Given the importance of patient-provider communication in determining patient satisfaction, a natural next step is to investigate the association between electronic communications and patient satisfaction as well as how communication behaviors changes with the implementation of a new EHR system.

Conclusion

This study described how providers using novel communication technologies in an evolving mobile-digital milieu. We found that email use lagged behind cellphone use to communicate with patients and that few providers encouraged electronic communications. In an area where patients seem to be willing to engaged, a better understanding of provider concerns and behaviors in patient-provider communication would encourage patient involvement while balancing provider interests.

Table 1: Respondent Characteristics

Characteristic	Community Practice (n= 85)	Academic Practice (n= 21)
Female, %	52%	42%
Mean age (SD)	50 (9)	47 (9)
Mean years since graduation (SD)	23 (9)	19 (10)
Specialty, %		
Internal medicine	38%	100%
Family medicine	38%	0%
Pediatrics	19%	0%
OB-GYN	6%	0%
Physician, %	86%	89%
Nurse practitioner, %	10%	5%
Physicians assistant, %	4%	0%
Practice hours, per week, %		
0-9	7%	53%
10-19	0%	21%
20-39	26%	11%
40 or more	67%	16%
Overall satisfaction score*	91	93

*From questions on overall provider satisfaction on the Consumer Assessment of Healthcare Providers and Systems survey, and Press Ganey Patient Experience Survey, respectively

Figure 1: Provider concerns regarding communication with patients

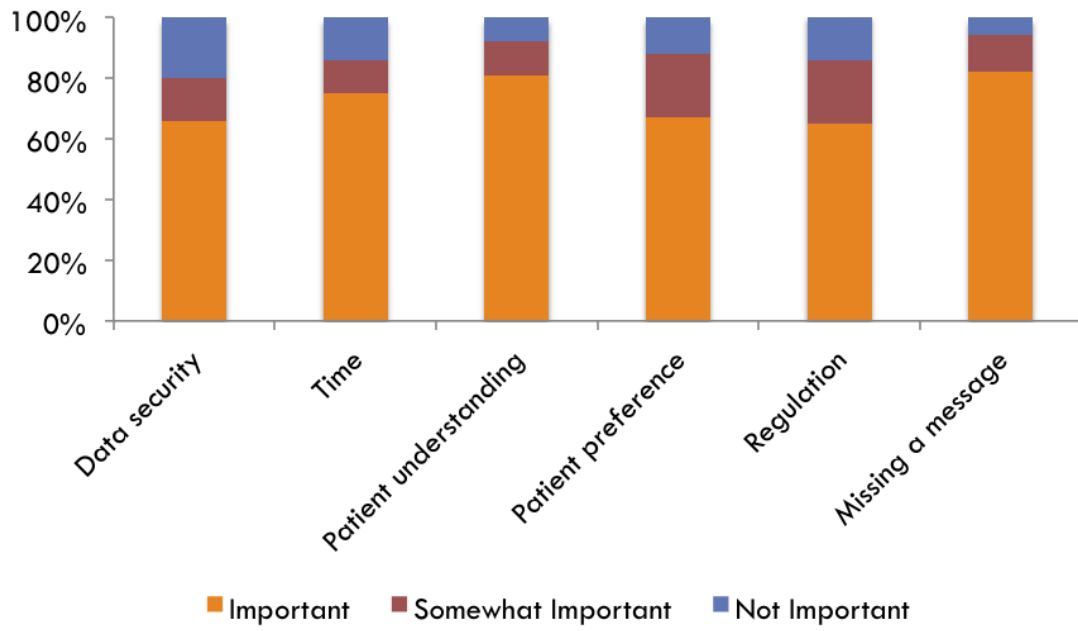


Table 2: Regression correlates of cellphone and email use

	Cellphone Use		Email Use	
	OR	95% CI	OR	95% CI
Giving				
Cellphone number	19.20**	4.28—86.22		
Email address			18.35**	4.15—81.19
Female	2.84	0.79—10.24	1.40	0.41—4.76
Academic	4.90	0.86—27.94	6.64*	1.15-38.09
Graduation year	(reference: pre-1980)			
1980-1989	0.36	0.03—3.95	4.90	0.41—58.77
1990-1999	0.57	0.7—4.84	2.90	0.35—24.41
2000+	0.52	0.05—5.30	1.80	0.17—19.01
Internal Medicine	0.43	0.07—2.62	1.50	0.28—7.92
Ob-Gyn	0.16	0.01—3.25	2.98	0.1—87.44
Family Medicine	1.54	0.24—9.92	1.06	0.18—6.08

*p=0.034, **p<0.001

Chapter 3: Patient satisfaction and provider use of electronic communication

Abstract

Background: Evolving technologies and patterns of communication can create both new opportunities and new problems for patient-provider communication, especially communications that occur outside of the office. Email capability, for example, can expand patient access to their providers at times most convenient for them, but is also less personal than face-to-face or telephone communications.

Objective: To evaluate the relationship between primary care provider use of cellphone, email, and text-messaging on patient satisfaction

Design: Cross-sectional analysis of the association between patient satisfaction scores and a 16-question community survey of 149 Mid-Atlantic primary care providers in community practice in the year prior to clinic implementation of a new electronic health record system with secure patient-messaging capabilities.

Main Measures: Patient satisfaction with provider access, communication, and overall provider ratings.

Key Results: Multivariable regression analyses found that making email addresses available to patients by non-pediatric providers was associated with a 19-point difference in the percentage of patients who gave the provider their highest rating, but not individual satisfaction domains. Patient and provider characteristics included as covariates in the analysis were not significantly related with satisfaction. The offering of a provider email address acts as a signifier that the provider trusts the patient and holds him or her in high regard. The use of these cellphone, email, and text-messaging was not found to be associated with patient satisfaction domains.

Conclusions: Provider provision of their email addresses may be an indicator of a stronger relationship with certain patients. This study elucidates the relationship between provider communication behaviors and patient satisfaction. A better understanding of the role of the patient-provider relationship and its role in patient satisfaction may help practices and providers improve their patients' experience of primary care.

Background

Patients want timely information and high quality healthcare. Measuring patient satisfaction is one way of capturing how well providers meet this objective from the patient perspective. One important aspect of patient satisfaction is the ability to communicate with doctors at times other than during in-person visits. Given the growing importance of patient satisfaction in the current healthcare system—reporting is required by the Centers for Medicare and Medicaid Services (CMS) as a performance measure for many of its programs, including value-based purchasing plans and accountable care organizations—and the concurrent evolution in communication technologies in the 21st century, understanding the role of new technologies in patient satisfaction is a key issue¹.

Patient satisfaction, particularly patient satisfaction with communication with their providers, is affected by many factors,²⁻⁸ including the quality of the patient-provider relationship and patient access to their providers (e.g. whether patients can reach their providers in a timely manner and as needed). While the content and tone of patient-provider communication are also important^{2,4,5,9}, patient rapport and relationships with their providers are also important^{2,7}. Patients value access to providers¹² and gestures that demonstrate having access, such as being given a provider's email address (even without using it), can improve patient satisfaction⁵. This study focuses on patient-provider access and relationships in the primary care setting by examining the relationship between patient satisfaction and provider use of cellphone, email, and text-messaging to communicate with patients.

Although excellent provider-patient communication is essential to high quality care, poor communication is a frequent problem¹⁰. Evolving technologies and patterns of communication can create both new opportunities and new problems. Email capability, for example, can expand patient access to their providers at times most convenient for them, but is also less personal than face-to-face or telephone communications. In addition, emails may go unanswered by providers who are too busy or who have not adopted new communication methods. While much of the research on patient-provider communication has focused on face-to-face interactions¹¹⁻¹³, patient-provider communications also occur outside of the clinic^{14,15}. A 2010 systematic review of email in patient-provider communication by Ye et al found that 5-10% of patients emailed their physicians and 70-80% were interested in doing so, figures that has most likely risen in the past decade¹⁶. More so than patient use, many more patients have expressed interest such communication,

Previous work on communications occurring outside the clinic have focused on singular modes of communication, most frequently, email or electronic-health-record-enabled secure messaging¹⁷⁻²¹. They have also focused on implementation of new technologies. But it is not known how use of these technologies influences patient satisfaction or how providers choose among available communication technologies. To address this question, we surveyed 149 primary care providers on their communication patterns to understand provider use and concerns of using cellphone, email, and text-messaging to communicate with patients. The results of this survey were linked with provider satisfaction scores to assess the association between using cellphone, email, and text-messaging and patient satisfaction.

Methods

Provider Communication Survey

Provider use and attitudes toward their use of cellphone, email, and text-messaging to communicate with patients was assessed using a provider communication survey. The 16-question survey collected information on provider communication behaviors, such as providing email addresses to patients, and concerns regarding using cellphones, email, and text messaging to communicate with patients. Provider behavior was assessed using 5-point Likert-type scales that ranged from “Never” to “Always” while attitudes were assessed with scales that ranged from “Not important at all” to “Very important^{22,23}.” The survey focused on providers’ practice during the spring of 2012-2013, the year immediately prior to implementation of a new Electronic Health Record (EHR) system in the clinics. It also asked providers whether they would continue to use email and text messaging given the introduction of the EHR system, which includes a secure electronic messaging component. The survey also collected limited demographic information. The survey was constructed iteratively by the research team and piloted with 15 providers and experts in provider communication solicit feedback, refine the questions, and assess face validity. The piloting refined and narrowed the scope of questions to focus on provider communication behaviors and made the language more precise and neutral.

Patient Satisfaction

The Clinicians and Groups Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey was used to assess patient satisfaction. The CAHPS surveys are widely used by health care systems and validated for

research²⁴⁻²⁶ and include questions specific to patient experiences in a primary care setting. For example, questions such as “In the last 12 months, when you made an appointment for a check-up or routine care with this provider, how often did you get an appointment as soon as you needed?” are relevant to primary care patients and their experiences. The practice employed “top box” scoring in reporting patient satisfaction scores, meaning that only the scores for the most positive categories are reported. A score of 86% on a the previous question, for example, meant that 86% of a given provider’s respondents reported that they “Always” got an appointment as soon as needed. The survey focuses on four domains of the patient experience: access, provider communication, office staff, and follow-up on test results. Patient satisfaction with communication with providers, that is, the average of the CAHPS survey items on patient communication with providers was 90% in the practice (range 55%-100%). The number indicates that on average, 91.0% of patient respondents marked the most positive category for providers in this practice in questions related to communication. Put simply, 91.0% of respondents are most satisfied with communication with their providers in this practice. Data were collected by a vendor certified by the National Committee for Quality Assurance (NCQA).

Data Collection

The primary population sampled was from a large, primary care practice in the mid-Atlantic region. All primary care providers with a 2012 satisfaction score still at the practice (73% of 2012 providers) were surveyed. A total of 182 primary care providers (i.e. physicians, nurse practitioners, and physician’s assistants in internal medicine, family medicine, and pediatrics) were surveyed

electronically during the spring of 2014. Non-respondents received the survey up to three times, including a paper copy in the second wave. No financial incentives were provided.

At the time of the survey, the practice had 26 primary care sites in diverse geographic locations throughout the region. Sixty-eight percent of these providers were female and 40% were non-white. The patient population was diverse and reflective of the general population in the mid-Atlantic region.

Power

A response rate of 60% was targeted, which would have yielded about 90 respondents. Assuming a 30% difference or greater in the use of novel technologies among providers (e.g. 35% of providers use email and 65% do not), this study is adequately powered at 80% at significance level of $p < 0.05$ with a sample size of 80 respondents or more. The effect size estimation is conservatively based on preliminary survey results from Johns Hopkins General Internal Medicine providers, whose use of novel technologies had effect sizes of 30% or lower.

Data Analysis

Descriptive analyses were used to explore the results of the communication survey. Multivariable regressions were performed examining the association between provider use of cellphone, email, and text messaging and patient satisfaction; patient satisfaction was the continuous outcome (dependent) variable, and provider modes of communication the predictors (independent variable) in the regressions. Binary dummy variables of the use of cellphones, emails, and text-messaging were used as independent variables in separate models. Provider characteristics (graduation year, sex, and specialty)

were included as possible confounding variables, and provider-level patient characteristics (sex, education, health status, race, and duration with practice) included as possible effect modifiers. Analyses were conducted using the statistical software Stata (StataCorp Version 13, College Station, TX).

In the adult patient population, providers predominantly communicate directly with their patients and those patients are asked to fill out patient satisfaction surveys regarding their provider. For the pediatric population, providers often communicate with their patients as well as their parents (as age permits) and yet only parents are asked to fill out the satisfaction surveys as proxy. Because of this difference in practice pattern, we stratify our analysis on patient satisfaction by non-pediatricians and pediatricians.

Results

Respondent characteristics

Of the 149 providers invited to join our primary sample, 85 (57%) responded to the survey. The majority of providers who responded were physicians (86%) who were female (52%), and practiced full time (67%), that is at least 40 hours per week. Table 1 describes the respondent characteristics in detail.

Patient Satisfaction

On average, patient satisfaction was high among this group of respondents. The average access score was 73.1%, the average communication score was 91.0%, the average follow up score was 84.0% and the average satisfaction with clinic staff score was 86.5%. In addition to domains of satisfaction, patient respondents were also asked to rate their providers from 0 to 10, with 10 being the highest. On average, providers in the analysis received a 10 rating (“overall satisfaction”) from 61% of their patients. The range spanned from 11% to 91%. The five scores appeared normally distributed in histogram plots. Satisfaction scores were higher for pediatricians than non-pediatricians in each of the four satisfaction domains and for perfect rating. The differences ranged from two to seven percentage points, though the differences were only statistically significant for the communication and access domains.

Patient Satisfaction and Provider Use for Non-Pediatricians

The majority of providers did not use cellphone, email, and text-

messaging to communicate with patients— 49% of providers used cellphone, 27% used email, and 2% used text-messaging to communicate with their patients. Table 2 examines the relationship between these behaviors and patient satisfaction without considering other variables.

Access, Follow-Up, and Support Staff Satisfaction

The analysis considered the relationship between provider communication behaviors—the use of cellphone, email, or text messaging, encouraging electronic communication, and providing cellphone number or email address to patients—on the different domains of patient satisfaction. In separate unadjusted regression analyses on the association between the use of cellphone, email, and text messaging and each domain of patient satisfaction, none of the use of these modes of communication were significantly associated with any type of these patient satisfaction. Analyses on the association between providers giving patients cellphone numbers and email addresses were similarly unassociated with these three types of patient satisfaction.

Communication Satisfaction

In unadjusted regression analyses, use of cellphone, email, and text-messaging, and the provision of a cellphone number to patients was not associated with communication satisfaction, however, the provision of an email address was positively associated with patient satisfaction with communication (Table 3). The association between email provision remained positively associated with patient satisfaction with communication. when the model adjusted for provider characteristics. However, the association was not statistically significant once patient characteristics were added to the model.

Overall Satisfaction (10-rating)

As with other satisfaction domains, provider use of cellphone, email, and text-messaging was not found to be associated with the overall satisfaction rating for the provider. However, giving email addresses to patients in the last year was consistently associated with overall satisfaction. In the full model of patient and provider characteristics, making email addresses available to patients in the last year was associated with a 19-point difference in the percentage of patients who gave the provider their highest rating (95% CI 2.07 – 36.83, $p= 0.032$). The other covariates were not significantly related with satisfaction. The association with communication satisfaction, however, was no longer statistically significant.

Patient Satisfaction and Provider Use for Non-Pediatricians

For pediatricians, none of the patterns of use were associated with any of the domains of patient satisfaction, nor overall satisfaction. A full model of patient and provider characteristics could not be run because of an inadequate number of observations, however, given the lack of association in the unadjusted and provider characteristics models, there is little reason to expect significant relationships between patterns of use and patient characteristics among pediatricians.

Discussion

This analysis examined the relationship between provider use of cellphone and email to communicate with patients and their patient satisfaction scores. Providers who gave their email addresses to patients had significantly higher overall satisfaction scores than other providers.

While previous work by researchers like Hassol et al have considered patient and provider perceptions of the electronic communications use of cellphone, email, and text-messaging for patient-provider communications,²⁷⁻³¹ few have examined satisfaction, fewer still have considered multiple modes at once, and none have considered the association of communication behaviors other than use. In two early studies examining satisfaction and email use, Stalberg et al found no differences in patient satisfaction between those encouraged to use electronic communications and those who were not¹⁹ and Leong et al found increased patient satisfaction among patients offered email access¹⁸. While our analysis also demonstrated higher patient satisfaction among providers who used email to communicate with patients, the association was not statistically significant once adjusted for patient and provider characteristics. There are a few explanations as to why provider use of cellphone, email, and text-messaging was not associated with patient satisfaction. Much of patient-provider communications outside of the clinic occurs over the office phone. Only a small portion of providers in our sample use cellphone (56%), email (48%), and text-messaging (2%) to communicate with their patients. It is likely therefore, that these uses are not prevalent enough or meaningful enough to be associated with patient satisfaction. Previous research on the use of these technologies and satisfaction have been

mixed and only focused on the addition of a mode of communication rather than comparison of existing modes. For example, Ralston et al found that Group Health's electronic access expansion was associated with higher patient satisfaction with access to care¹⁷. Leong et al found increased patient satisfaction when email was offered to patients¹⁸ while Stalberg et al observed no difference in satisfaction between patients encouraged to email their physicians and those who were not¹⁹. Our study was also under-powered to detect an association between use and patient satisfaction.

Considering provider behaviors like the giving of email addresses expands the analysis beyond past work and raises questions regarding differences in communication access and the limits of the patient satisfaction measures. Our study found that holding all else equal, providers who gave their patients their email addresses had significantly higher overall satisfaction scores than providers who did not. Writing about patient-provider communication, Ronald M. Epstein noted that "Presence is physical and virtual ... Email access to one's doctor seems to ameliorate the isolation that impersonal health systems can impose⁵." The offering of a provider email address, then, may be a signifier that the provider trusts the patient and holds him or her in high regard. That the act was only associated with overall satisfaction and not any of the other domains of satisfaction suggests a signifier of satisfaction and relationship not captured by access, communication, follow-up, and staff satisfaction. Qualitative analysis of provider communications suggest that providers may give their email addresses to patients that they trust to understand the boundaries of the provider-patient relationship, and many of those who email are colleagues or social peers within the same medical system.

Thus, the giving of an email address may represent more than just the access itself but a trusting and oftentimes, peer, relationship. Patients may be rating their satisfaction with their providers based on their relationship.

Although providers who gave their email addresses to patients received higher satisfaction scores from patients than those who did not, it is not known if the same patients who completed the satisfaction survey received the email addresses or that they used the email address provided to them. Future research could examine the link more precisely by assessing use of email on the patient level. It has been noted that many providers who do give their email addresses do not give them to all their patients, yet the criteria for giving is not always well defined³². Future research could explore in detail how providers make that decision and whether email communications lead to greater or less disparity in access for certain patient groups.

Limitations

This study had several limitations. First, it utilizes the CAHPS survey as a measure of patient satisfaction. The CAHPS survey reports patient satisfaction responses in aggregate. Additionally, low response rate is a well-known limitation of CAHPS. The same patients responding to the survey may not be the ones with whom providers provided email addresses to or communicated via cellphone. Due to the brevity of the CAHPS survey, there are other possibly confounding patient variables to the communication-satisfaction relationships that the analysis could not adjust for, like how much patients like or trust their providers. However, the CAHPS surveys are the currently best available and most widely used data source on patient satisfaction ^{25,34-37}.

Second, the analysis sample was small. Although the provider survey had a response rate of 57%, a portion of the respondents (23%, n=20) did not include a name, which prevented us from linking their survey responses to patient satisfaction scores. Because of the small number of respondents and the stratification of pediatric and non-pediatric providers, the study was underpowered to assess relationships with lower effect sizes, such as the relationship between provider use of email and domains of satisfaction beyond the perfect rating among non-pediatricians. Given the small sample size, the significant relationships that were observed are possibly conservative estimates of the true association between provider provision of email address and patient satisfaction. If this study was replicated in a larger sample, we might expect to observe more significant associations.

Third, the study sample was limited to a primary care practice in one region of the country, and that the providers in these practices were employees and not independent owners in their practices. The habits by providers in these two practices may not be generalizable to those in other practices or states. Yet the limited sample is a limitation to the study, the choice of the primary care practices was also a strength. By surveying a large primary care practice in the region—a practice with great geographic and socio-demographic diversity—the findings of the study are likely to be generalizable to other regional providers with similar demographic composition.

The findings of this study have several implications. For both patients and providers, the finding hints at the importance of the patient-provider relationship in a patient's satisfaction with their provider. It seems likely that the results of the CAHPS survey were influenced by factors not included in the

survey, like communication behaviors, trust, and liking. For providers, this research and the coming shift to secure-messaging suggest that patient use of electronic communication will likely increase in the coming years. Providers will need to figure out how best to communicate and deliver care electronically and overcome concerns regarding time, boundaries, and patient understanding. For healthcare institutions such as hospitals or professional societies like the American College of Physicians, these findings suggest the importance of electronic access to their providers, even if the access is seldom used, and raises considerations of how policies guiding providers in balancing boundaries and access. The study also points toward several areas of future research, including an expansion of this study to better examine the nuances of the relationship between patient satisfaction and provider communication behaviors. Other future work could investigate the relationship between provider communication behaviors and the provider-patient relationship.

Conclusion

This study found a positive association between patient satisfaction scores and provision of email addresses to patients by primary care providers. Patient satisfaction is a measure of great policy interest and importance to individual providers as well as health systems; most significantly, the Affordable Care Act (ACA) has mandated the use and reporting of patient-centered assessment³⁸ like the CAHPS survey. This study elucidates the relationship between provider communication behaviors and patient satisfaction. A better understanding of the role of the patient-provider relationship and its role in patient satisfaction may help practices and providers improve their patients' experience of primary care.

Table 1: Respondent Characteristics

Characteristic	Respondents (n= 85)
Female, %	52%
Mean age (SD)	50 (9)
Mean years since graduation (SD)	23 (9)
Specialty, %	
Internal medicine	38%
Family medicine	38%
Pediatrics	19%
OB-GYN	6%
Physician, %	86%
Nurse practitioner, %	10%
Physicians assistant, %	4%
Practice hours, per week, %	
0-9	7%
10-19	0%
20-39	26%
40 or more	67%
Communication access score	91%

*From questions on overall provider satisfaction on the Consumer Assessment of Healthcare Providers and Systems survey

Table 2: Overall Satisfaction Scores, by Communication Behavior

	Users	Non-Users	P-value
Cellphone	63	58	0.24
Email	65	59	0.16
Text-messaging	61	56	0.70
Give cell #	64	59	0.26
Give email address	67	53	0.001

Table 3: Patient Satisfaction and the Giving of Email Addresses

Overall Satisfaction-Non-Pediatricians						
	Unadjusted Model		Model with Provider Characteristics		Model with Provider and Patient Characteristics	
	Coefficient	95% CI	Coefficient	95% CI	Coefficient	95% CI
Give Email	15.60	3.60-27.60	17.94	3.94-31.94	19.45	2.07-36.83
Female			6.44	-9.39-22.27	-25.71	-57.05-6.62
Graduation decade (compared to pre-1980s)						
1980s			-3.27	-32.51-25.98	-6.59	-33.66-20.47
1990s			-5.30	-28.84-19.24	-6.14	-32.49-20.22
2000s			1.12	-27.14-29.38	18.36	-15.14-51.85
Nurse Practitioner (compared to MD)			-14.60	-35.90-6.71	-3.52	-30.12-23.01
Ob-Gyn			9.11	-14.41-32.62	-22.71	-58.17-12.76

Communication Satisfaction-Non-Pediatricians						
	Unadjusted Model		Model with Provider Characteristics		Model with Provider and Patient Characteristics	
	Coefficient	95% CI	Coefficient	95% CI	Coefficient	95% CI
Give Email	8.75	1.42-16.08	8.92	0.16-17.68	6.51	-3.04-16.07
Female			1.11	-8.80-11.02	-20.35	-37.58-3.12
Graduation decade (compared to pre-1980s)						
1980s			-5.98	-24.29-12.32	-5.53	-20.40-9.35
1990s			-4.03	-19.39-11.33	-1.59	-16.08-2.90
2000s			0.31	-18.00-17.37	17.53	-0.89-35.94
Nurse Practitioner (compared to MD)			-7.01	-20.34-6.33	2.78	-11.85-7.40
Ob-Gyn			6.28	-8.44-11.00	-13.17	-32.66-6.33

Overall Satisfaction-Pediatricians						
	Unadjusted Model		Model with Provider Characteristics		Model with Provider and Patient Characteristics	
	Coefficient	95% CI	Coefficient	95% CI	Coefficient	95% CI
Give Email	-1.33	-27.12-24.45	-2.27	-36.93-32.39		
Female			-7.36	-44.80-30.07		
Graduation decade (compared to pre-1980s)						
1980s						
1990s			-12.36	-49.80-25.07		
2000s			16.23	-22.20-54.65		
Nurse Practitioner (compared to MD)			-14.60	-85.27-14.27		
Physician's Assistant			17.36	-42.67-77.39		

Communication Satisfaction - Pediatricians						
	Unadjusted Model		Model with Provider Characteristics		Model with Provider and Patient Characteristics	
	Coefficient	95% CI	Coefficient	95% CI	Coefficient	95% CI
Give Email	0.29	-9.50-10.07	1.43	-15.29-18.15		
Female			-7.44	-25.51-10.62		
Graduation decade (compared to pre-1980s)						
1980s						
1990s			-5.94	-24.01-12.12		
2000s			-4.60	-13.94-23.15		
Nurse Practitioner (compared to MD)			-0.39	-25.43-22.61		
Physician's Assistant			-0.39	-29.36-28.58		

Chapter 4: Favorite Patients and Their Effects on the Patient-Physician Relationship

Abstract

Background: It is human nature to like some people more than others. Just as many physicians have experiences with difficult patients, many also have favorite patients, yet little is known about the attributes of these patients.

Objective: To describe physician experiences with favorite patients and how such patients may influence how physicians provide care.

Design: Semi-structured key informant interviews with 25 primary care physicians at a large academic medical center, practicing at several clinic settings.

Approach: We recruited faculty participants from the Division of General Internal Medicine via email, and conducted thematic analysis on the transcribed interview data.

Key Results: The term ‘favorite patient’ raised concerns of boundaries, judgment, and the idea of favoritism for the patients. Nevertheless, the majority of participants had favorite patients. For many, favorite patients were not necessarily the most compliant patients, or those most similar to the physicians in in personality or demographic characteristics. Instead, many were defined by the length of the relationship and experiences that strengthened the patient-physician bond. As one respondent explained, “They’re favorites for [different reasons]. Just like you have different children and you like your children all equally, but they're different.” Participants felt that the favorite patient bond had a positive effect on physicians and patients though the ‘extra effort’ physicians did expend on their favorite patients were small, like answering calls faster. Physicians also discussed least favorite patients unprompted; such patients were demanding of their physicians’ time and services. Participants voiced that being cognizant of having favorites and least favorites helps to prevent favoring the care of certain patients over others.

Conclusions: Primary care physicians value patient relationships and benefit from deep bonds. A better understanding of how favorite patients benefit

primary care physicians could help inform efforts to reduce professional burn-out and improve relationships for all patients.

Background

It is human nature to like some people more than others. Our affinity and preferences for some people and not others are manifest in the friendships, personal relationships, and even political affiliations¹⁻⁴. A host of factors determine why people like some more than others, from how much they are liked⁵, to similarities³, and culture⁴. Often times, people are attracted to people who are most like them in friendships and romantic relationships^{1,3}. Personality similarities, however, need not be present for effective work partnerships^{6,7}. It is not clear which model best applies to strong patient-physician relationships. While discussion of liking are often done in the context of boundary crossing for physicians and therapists⁸⁻¹¹, and the dangers of treating some patients better than others^{12,13}, there has been little examination of patients that are liked by their physicians more than others within the bounds of professional conduct and whether or how such preference influences physicians, patients, and the care that is delivered.

The bounds of the patient-physician relationship, one “in which one person (a patient) entrusts his or her welfare to another (a physician), who receives a fee for the delivery of a service,” are well established in medical education and professional guidelines, especially in regards to sexual misconduct^{8,10}. Challenges arise in the gray areas of guidelines, such as receiving gifts from patients and becoming friends with patients^{8,11,14}. While experts warn of how these challenges may cloud physician judgment or lead to disparities in care, they are often mixed on where or how to draw the line and there has been little empirical evidence of the effects of boundary challenges, for example, quantifying gifts from patients and effects on their physicians^{11,15-18}.

While little has been written about favorite patients, the converse phenomenon, that of the ‘problem,’ ‘hateful,’ or ‘heart sink’ patient is well explored in the medical literature¹⁹⁻²¹. The term ‘hateful patient’ was first coined by JE Groves in 1978²². Strous et al re-examined the term in 2006 for the 21st century context and found the archetypes: the dependent clinger, the entitled demander, the manipulative help rejecter, and the self-destructive denier still true to modern medical practice, albeit with the dependent clinger broaching boundaries via email, for example, rather than telephone^{20,22}. Beyond these archetypes, O’Dowd et al found that definitions of ‘heart sink’ patients to differ by physician sex and practice location, suggesting the bi-directional nature of poor patient-physician relationships. Despite the many reasons why a patient may be deemed especially challenging, their effects on physicians are similar: these patients engender feelings of anger, exasperation, and frustration^{19,20,23}.

The hateful/heart sink phenomenon in medical practice is related to the notion of ‘countertransference’ in the psychiatric literature—a (most often negative) reaction of providers to their patients due to unresolved conflicts on the provider’s part. The body of work surrounding this notion offers a conceptual guidepost and helpful parallel in the exploration of favorite patients, their attributes, effects, and the management of their effects.

Study Aims

Despite the exploration of challenging patients and boundary breaches, little is known about physician relationships with their favorite patients. Just as understanding the negative extreme may help protect against burnout, so might an investigation of positive experiences with favorite patients, as well as

how these relationships affect patients and patient care. Given the potential best practices that could be illuminated from physician interactions with their favorite patients and the insight such an analysis would provide on the differential treatment of patients, and the dearth of study on this topic, there is a compelling need to investigate physicians and their favorite patients. To address this gap, we conducted semi-structured interviews with primary care physicians with three aims in mind: to understand physician perceptions of the favorite patient notion, to understand who their favorite patients are, and to examine what effects, if any, favorite patients have on the patient-physician relationship.

Methods

Participants

Participants were faculty members and fellows from the Division of General Internal Medicine at a large, academic medical center. The participants were all primary care physicians, practicing at several clinical settings, chosen on their presumed ability to meaningfully reflect on their experiences with patients in primary care. They were randomly selected from the Division list and invited to participate via email.

Procedure

Twenty-five semi-structured interviews were conducted by one researcher (JLL) to explore primary care physician experiences with their favorite patients. The interview guide had 8 questions (e.g. “What does the term favorite patient mean to you?”) and was designed to elicit participant perspectives on how they might define ‘favorite patients,’ examples of their favorite patients, as well as short-answer questions about their interactions with patients (**Appendix 2**). The design of the interview guide was driven by existing literature on liking, teamwork, difficult patients, theories of countertransference, as well as the personal anecdotes and consensus of the study team. On average, the interviews were between 20-30 minutes in length. The interviewer took detailed notes during each interview and audio-recorded all but three interviews. Each interview and its accompanying notes were de-identified, transcribed, and entered into the software NVivo (NVivo for Mac, version 10) for analysis. All interviews were conducted in English.

Participants were compensated with a \$50 gift card. An iterative sampling approach was used until the interviews reached saturation.

Data Analysis

The study utilized the Giorgi method of data analysis, as modified by Malterud²⁴ to develop descriptions and notions related to human experiences—in this case, experiences in primary care. Each interview transcript was analyzed by two independent members of the study team (JLL and ERP), first by getting an overall impression of the interview, then identifying and coding each meaning unit as NVivo nodes²⁴. The contents of each meaning unit were then abstracted and organized into groups with other units as themes emerged²⁴. The interview guide was compared with the notes and transcript to support and refine the analysis in this iterative process. Disagreements in coding between the two independent members of the study team were resolved by consensus with a third independent investigator.

The study was reviewed and deemed exempt by the Johns Hopkins Bloomberg School of Public Health institutional review board.

Results

Interviews were completed with 25 participants. The participants were predominantly white (84%) and female (56%). Four major themes, each with its subsections, emerged from careful review of the transcripts; they are described here in detail and summarized in Table 1.

Physician Perspectives on Having ‘Favorite Patients’

Quantifying Favorites

While the term ‘favorite patient’ is not yet established in the medical literature, participants had a range of reactions to the idea of favorite patients. Some had a clear, pre-conceived idea in mind while others had not considered the term until they were contacted but upon reflection, recognized favorite patients in their practices. As one participant explained, “I wouldn't have used the term favorite before your email for the study. But in thinking about this there are certain that pop up that I think, "oh yeah, she's totally one of my favorite patients.”

A few rejected the term entirely and said they had no favorites. These participants did so because to them, the term implied acts of favoritism or favoring certain patients over others and they did not feel it applicable to how they practice medicine. Of the remainder that had favorite patients, half the participants identified ‘favorite patients’ as a type of patients— those that they liked and got along with for differing reasons, and had many over a career, while the other half identified ‘favorite patients’ not as a type, but a handful of patients that stood out over their career.

Relationship to Physician Motivation

The participants in this study overwhelmingly enjoyed their interactions with the majority of their patients, and felt driven to help them. As one participant said, “Part of the reason that I do this job is because I want to help people and enjoy helping them.” They discussed looking forward to seeing patients they know, checking up on patients, solving medical challenges, and helping improve patient health as a part of their work. Though participants were careful to caution that while they found these rich relationships “satisfying,” they are not solely “driven by satisfactions,” respondents enjoyed relationships in which they are entrusted with their patients care. Regardless of how many favorites they have, these participants liked most of their patients. Favorite patients then, represent not just people they like, but those that they like more than others. As one participant explained, “I genuinely like people. For me to have someone who rises to the favorite level means they have to be super special.”

Relationship to Physician Role

Participants raised the notion of boundaries as they discussed their views on patient care and their patient panel, often in relation to the limits of their positive regard and appropriate behavior within the bounds of the physician-patient role. While many participants expressed undeniable fondness for their patients, describing favorites as “like family,” or “like old friends,” they were also careful to draw the distinctions, many noting that they would not socialize with patients outside of the clinic and noting that they would not have family members or close friends as patients. One participant summarized the contradiction this way, “I’m trying to figure out how to define

this. I don't do things outside of the office, I don't do Facebook or any social media with patients. But at the same time, I do feel like I'm their friend.”

Participants also discussed the patient-physician role and how they approached patient care. In discussing favorite patients, but especially their challenging patients, physicians often used the term “it’s not about me” to indicate that their interactions on the patients are focused on the patient and meeting the patient’s needs, regardless of their feelings toward them. Favorite boundaries can complicate these distinct roles and boundaries. Yet despite the need for boundaries and a concerted effort to focus on patients, the majority of respondents (22 out of 25) claimed to have favorite patients in some form and felt that it was almost an unavoidable part of their job. As one participant said:

I think it's human nature to like some people more than others. It just is. To suggest that it's not the truth is sticking your head in the sand.

The Favorite Patient

Attributes of Favorite Patients

For many, favorite patients were not necessarily the most compliant patients, or those most similar to the physicians in socio-demographic characteristics. Many favorites were neither. Instead, some participants spoke of similar personality traits, outlooks, of “something” that clicked in their personalities while others noted admirable qualities in their favorite patients. As one participant explains, “Some of it is their personality, some of it things we have in common, and some of it is their stories... they're favorites for [different reasons] just like you have different children and you like your children all equally, but they're different.” Accordingly, participants described their favorite patients in an array of positive terms that represented “something enjoyable”

about the patients, such as “smart,” “lovely,” and “memorable.” Despite the range, there were three characteristics that were true of almost every favorite patient: they were long time patients, they were very sick, and they handled their difficult circumstances gracefully. The length of the “long time” relationship, however, varied from a year to decades, depending on how long the physician has been in practice.

Interactions with Favorite Patients

Participants described their interactions with favorite patients as warm and interactive. Favorite patients revealed stories about their histories, families, and interests in these encounters and often asked after their physicians and families, though participants noted being careful not to disclose too many personal traits about themselves. Rather than blindly following or rejecting physician orders, favorite patients had dialogues with their physicians regarding their treatment and effective working relationships with open communication. Because so many favorite patients were long time and very sick patients, participants spent more time with them than they had other patients. Oftentimes, favorite patient-physician interactions involved going through a crisis, such as a hospitalization or a health issue that warranted repeated visits through which a bond was crystallized. These interactions often had satisfying outcomes for physicians, especially when they were able to address their favorite patients’ needs.

Effect of the Favorite Patient Relationship

Effect on Physicians

Participants generally spoke of the effects of their relationships with favorite patients in positive terms—noting, for example, “honestly, it improves

my day to see them.” A few cited specific lessons they learned in caring for their favorite patients, such as learning to resist solving every issue. Yet becoming attached to favorite patients also came with emotional consequences: losing favorite patients caused grief. “Sometimes it’s mildly painful,” one participant remarked, “and sometimes it’s very painful when somebody you really like quits your practice.”

Effect on Patients

Physicians enjoyed their relationships with their favorite patients and believed that their patients, too, appreciated the bond. One participant described her favorite patient as “brightening at our visits,” while another said, “he treasures me, just like I treasure him.” Aware of the depth of these bonds and the potential effects on their judgment, most participants prefaced their responses with statements about trying to treat their patients equally. Yet even those that tried to treat patients equally also admitted devoting extra effort to the care of their favorite patients. The extra effort often manifest themselves in small things—such as returning a call faster or doing paperwork faster. Participants also spoke of being there for life events, like attending a wedding or speaking at a favorite patient’s funeral that they would not do for every patient that they liked. Regarding patient care, the most tangible benefits to patients are that as their physicians’ favorite, who are most often medically complicated patients that have spent a lot of time together, their physicians know them and their circumstances very well. As a result of this knowledge, they become the person best suited to take care of their patients. One participant described it this way:

“I have a patient who gets non-cardiac related chest pains and she goes to the ER like once a month and they always do some sort of thing that she doesn’t need because they don’t know her. I know her, and I’m just not going to send her to the ER for that because I know what it is.”

Effects on How Physicians Communicate

Exploring whether and how the patient-physician relationship affects patient care farther, participants were asked which patients had their cellphone numbers and email addresses to understand how access decisions are made. Cellphone numbers were most privileged and when given, generally only to a few patients whose illness or circumstances warranted having access to their physicians. Some favorite patients fell into these categories, though just as many did not. Regarding email access, though respondents discussed the deficiencies of email use, including concerns of data security and the possibility of missing messages, email use was more prevalent and accepted, especially when many patients could find physician email information online. A little more than half of participants didn’t place any restrictions on who they communicated with via email. For physicians that did, granting patients email access was characterized by circumstance (e.g. patients traveling abroad) and whether patients were physicians. Respondents discussed being more inclined to use email to communicate with patients who were either employed within the same hospital system and/or were physicians themselves. To overcome some of the deficiencies of email use raised, participants encouraged patients toward the secure-message feature of the newly electronic health record system and away from email.

Challenging Patients

The Opposite of Favorite

In discussing favorite patients, participants inevitably made unprompted comparisons to their least favorite patients. Reinforcing the notion that these physicians generally liked their patients, participants noted that they had more favorites than challenges. While participants gave a range of positive characteristics to describe their favorite patients, their perspectives on challenging patients were less varied. While interactions with favorite patients were often characterized by patients and physicians working well together to address an ailment, interactions with least favorite patients were the opposite. The physicians' most challenging patients often struggled with mental illness. Participants described these patients as lacking an understanding of the limits of what a physician can do and demanding services that were inappropriate for their care, leaving patients unsatisfied and feeling like they cannot or do not know how to help their patients. These challenging patients also affected their physicians; whereas favorite patients motivated them to go above and beyond, perceived abuse of privileges by patients motivate them to restrict access. One said, for example, "I had a patient with pathologies who would write paragraph after paragraph after paragraph in emails. So I actively do not give out my email." And more so than with favorite patients, participants used emotionally charged words to describe the effect of challenging patients on them, such as being "worn down," having a "cringe reflex." Participants also described these patients as "sucking the life of you" and "taking a pound of flesh." Like favorite patients, challenging patients are also characterized by personality, rather than medical, issues. For example, one participant noted:

“If you said, you have a choice of seeing your patient who is medically complicated or who is personality complicates the issue, I'll take the medically complicated one anytime. Hands down. I find that less emotionally draining than somebody where it's a personality issue.”

Physician Self Awareness Regarding Challenging Patients

Several participants noted that being aware that they have favorite and least favorite patients helped them to treat patients equally. One participant explained, “It's OK to like some patients more than others [as long as one is] aware of that. The big part is not changing your behaviors for other people.” Another participant spoke of the importance of being able to recognize and overcome reactions to least favorite patients for the same reason, noting:

“I think the more important things is to acknowledge that there is something about a patient that is less appealing, because some personalities are just less appealing. And then say, ‘But I still have to give them the appropriate attention and think through the problem like I would if I felt differently about them.’”

Once Challenging Patients

While favorite patients do not appear to fall out of favorite status in their physicians' eyes, many participants spoke of how once challenging patients became their favorites. Often, this is accompanied by both the passage of time and a change in perspective on the physician's part as they realize how they can best help these challenging patients. For example, several participants spoke of realizing the therapeutic effect of the visit itself for challenging patients. One participant describes the experience this way:

[There was one woman who] started as someone I dreaded seeing because she was constantly running out of her pain medication. [...] I had a total shift when I realized that she actually didn't come in for pain medication. She'd come in and say that she's in pain and I realized that [...] she just wants someone to see her through. I would do relaxation exercises [with her]- stuff I had never learned in medical school but I had learned throughout my life. [...] She was so appreciative of those things— she was one of my favorite people in the end but in the beginning it wasn't that way.

Other physicians learned to deal with challenging patients by taking a global perspective and recognizing that challenging patients themselves can change, noting, “I've been doing this a long time, I've been able to see the ebb and flow in patients and know that they'll go through a bad period where they'll be complaining and depressed and I'll not enjoy seeing them, but if I wait enough they'll come out of it and that's a perspective I didn't have earlier on.”

Beyond having a better understanding of their patients and how to help them, physicians also spoke of transitioning patients from least favorite to favorite as a necessary coping mechanism, so that there is something to look forward to with all patients. One participant explains that, “I'm trying to convince myself that the challenging patient is the most gratifying if I have a good attitude about it... it's necessary for survival, to redefine favorite as you go through a medical career. Because if you face a day when you can't stand a patient, you're really shooting yourself in the foot and you need to overcome it.”

Discussion

By illuminating how primary care physicians view the idea of favorite patients and their own favorite patients, we shed light on a previously unexamined phenomenon. Despite the literature on how people like and are attracted to other people who are like them, our results found that favorite patients were often dissimilar from their physicians in socio-demographic and personality traits. Instead, in line with literature on heart-sink patients and countertransference^{21,25}, our results suggested that there is no one model of favorite patient but depends on the physician. Just as difficult patients are defined by their physicians and negative reactions to them are triggered by physicians' own experiences and the physicians reactions to patient attributes rather than the attributes themselves, physician perceptions of favorite patients are different for everyone. Humor, for example, was prized by some but not others.

This analysis demonstrated that like the 'heart sink' or 'hateful' patient, primary care physicians also have favorite patients. According to them, they have more favorite patients than they do least favorites. Participants were thoughtful about their approaches to patient care and tried not to treat patients differently regardless of their feelings. Favorite patients exhibited a variety of positive characteristics and were often dissimilar from their physicians. While challenging patients can improve to become favorite patients, favorite patients did not seem to lose their status. Physician decisions in granting communication access to patients appeared to be driven less by favorite status than by health status and whether the patient is a peer.

The interviews also shed light on circumstances that are conducive to building a strong patient-physician bond— time, either through months, years, or even decades of relationship building, or accelerated through going dealing with a difficult health problems that required more acute interactions, or both.

The study also illuminated how physicians decide how to communicate with their patients outside of the clinic setting and showed that though physician preference played a part in whether and how much they used cellphone and email to communicate with patients, patient behavior also played a part. For emails, particularly, physicians mentioned communicating via email if patients asked to, if patients had a circumstance that required email communication, and if patients were familiar enough (as colleagues or fellow physicians) that physicians felt comfortable doing so. These results echo previous survey findings by Lee et al that most physicians are willing to engage in email communications with patients if patients ask, regardless of physician preference.

Even though participants did not share any experiences in which their judgments were distorted because of their attachment to their patients, and many thought themselves capable of making undistorted judgments, they were nevertheless aware of the consequences of being too attached to their patients and raised these potential concerns in the discussion, especially in regards to the boundaries that they draw between their patient-physician relationships. The literature on VIP patients—patients whose social status lead their physicians to deviate from usual care— highlights the physician urge to treat certain patients differently from others, particularly when the patient is a close friend, family member, colleague, or bears gifts, as well as the dangers in doing

so^{12,26,27}. More evidence is needed, however, to quantify the prevalence and magnitude of such a phenomenon among primary care physicians.

While the strength of this study are in its detailed descriptions of physician experiences with favorite patients, there are several limitations to the study to be reviewed. First, we recognize that by only focusing on participants who were affiliated with a large, academic medical center, we might have a limited view of the heterogeneity of primary care physician perspectives on favorite patients. In including participants who practiced in several different clinic settings, did try to include a variety of experiences. Despite this, these academic respondents were very reflective and self-aware, and a few cited works of their colleagues on patient-physician relationships and communication in their interviews. While it is likely that the reflections of these respondents may differ from those not as acutely aware of the literature on patient-physician relationships, their experiences with the patients did not appear to be demonstrably different. Second, physician remarks on their interactions with favorite patients reflected their perceptions of the relationship and might not reflect their actual behavior or their patients' intent. Physicians may, for example, underestimate the extra effort they exert on their favorite patients or overestimate how much their relationships benefit the patients. Nevertheless, this study provided us with unique insights into the concept of favorite patients previously unavailable in the literature.

Despite the limitations, our findings have practice implications for primary care physicians. The benefit of having favorite patients to physicians was undeniable— participants were partially motivated by their relationships with their patients and as one participant put it simply, the favorites “help

outweigh the bad.” Some patients also benefitted from favorite patient-physician relationship, though the differences in patient care appeared slight. Given the positive effects these relationships have on physicians and few, if any, experienced downsides for the overall patient population, our findings suggests that being thoughtful and reflective about having favorite patients may help primary care physicians regard their practice positively and sustain them in their practice. In dealing with both favorite and challenging patients, acknowledging their patients’ effects on them can also help their ability to give appropriate care to their patients.

For patients, the findings of our study shed light on the duality of the patient-physician relationship and how best to work with their primary care physicians. Rather than striving to be favorite patients, patients should realize the two-way nature of their relationship with their physicians and that they can dictate how they communicate with their physicians. Reinforced by our findings on how physicians determine patient access to communication technology, physician comments like “it’s not about me” and their discussions of open communication between patients and physicians, patients should be empowered by their role in shaping the patient-physician relationship. The crucial role time plays in the favorite patient-physician, and the added knowledge that comes from time, also point to the importance of having a usual source of care and establishing a relationship with a primary care physician.

For educators and health systems, the findings of this study illustrate the strength of the patient-physician bond. The varied experiences of the participants and their diverse judgments in how they draw boundaries in their patient relationships also suggest a need for guidelines on patient access to

physicians and other boundaries. Given how differently physicians consider their relationships with patients and how they choose who to communicate with via cellphone, email, and secure messaging systems, further guidance on how boundaries should be drawn and communications outside of the office should occur could lead to more uniform patient experiences.

Conclusion:

Just as we like some people more than others, physicians have patients that they like more than others. Most often, favorite patients are not necessarily similar to their physicians in socio-demographic characteristics, instead, they are characterized by a long-term relationship with their physicians, illness, and the grace with which patients handle difficult circumstances. Recognizing the existence of favorite patients allows physicians to be mindful about the patient-physician relationship, just as acknowledging countertransference also helps to minimize its effects. Future work on this subject could survey a broader population of physicians to assess the gradation and degree to which the themes generated from the analysis reflect experiences and attitudes regarding favorite patients in general practice.

Table 1: Summary of Interview Themes

Theme	Subtheme	Summary	Example
Perspectives on 'Favorite Patients'	Quantifying favorites	While a few participants claimed to have no favorites, the rest were divided between those who had many and those with only a few.	“When I think of favorites, there are 3 that come to mind.” “I don't think I could name them. I have so many that I like so much.” “Part of the reason that I do this job is because I want to help people and enjoy helping them. I like to see patients who I seem to usually help.”
	Physician motivation	Physicians like and are motivated to help people; favorite patients are people they like even more.	
	Physician role	Physicians see distinct roles for themselves and their patients; friendships and favorite patients can blur the boundaries of those roles.	“I'm trying to figure out how to define this. I don't do things outside of the office, I don't do Facebook or any social media with patients. But at the same time, I do feel like I'm their friend.”
Favorite Patients	Attributes	Favorite patients have a number of positive characteristics; most often, they are long term patients, who have significant illness, and bear hardships with grace.	“Some of it is their personality, some of it things we have in common, and some of it is their stories... they're favorites for [different reasons].”
	Interactions	Favorite patients have effective working relationships and open communications and a bond often forged through going through a health crisis together	“If I had to think of a theme, it would be people with whom there was some challenge[...] that we were able to partner and work through.”
Effects of the Favorite Patient Relationship	On physicians	Favorite patients have a positive effect on their physicians, but losing these patients can be painful.	“Honestly, it improves my day to see [my favorite patients]. I consider that person a part of

			my professional life [...]. I value their presence.”
	On patients	Favorite patients enjoy seeing their physicians and their physicians know them well; some may have better access to their physicians than other patients.	“There is a truth to the fact that my favorite patients probably hear back from me more rapidly than my less favorite patients.”
	On communication access	Physicians only give their cellphone numbers to the sickest patients; email addresses are available to more patients, and especially to fellow physicians. Sometimes favorite patients fall into these categories.	“Our medical colleagues are emailers [...], you know they're not going to abuse it. So my medical colleagues, [will have my email address].”
Challenging Patients	Opposite of favorite	Least favorite patients do not understand the limits of what physicians can do for them and demand inappropriate services; often, these patients have mental illnesses.	“There are certain patients that I groan when I see them on my list because they take up a lot of time. Not because they're sick. But because they're worried-well or somatizers or patients who create problems that aren't necessarily there.”
	Physician self awareness	Physicians are aware how having favorite and least favorite patients may affect their judgment, and believe that recognizing their feelings helps them to treat patients equally.	“I think the more important thing is to acknowledge that there is something about a patient that is less appealing [...] and then say, 'But I still have to give them the appropriate attention and think through the problem like I would if I felt differently about them.’”
	Once challenging	Favorite patients do not fall out of favor, but	“Patients who I never thought I would even

patients

some least favorite
patients become
favorites over time.

come to like grow
into some favorites
[through the] shared
experience of
knowing them for
over a decade.”

Conclusion

Summary of Findings:

This analysis considered patient-provider relationship through three different aims.

Aim 1: To characterize provider use and concerns about cellphone, email, and text-messaging to communicate with patients, and provider patterns of communication.

While more respondents had used their cellphones than email to communicate to patients, providers were more inclined to give their email addresses than cellphone numbers. Provider sex, specialty, and year of graduation were not associated with use of communication technologies. However, academic providers and providers who gave patients their email addresses were significantly more likely to use email to communicate with patients than their counterparts.

Aim 2: To assess the relationship between provider use of cellphone, email, and text-messaging to communicate with patients and patient satisfaction.

Non-pediatric providers who made their email addresses available to patients had higher overall satisfaction scores, holding provider and pediatric variables equal., There were no other significant associations between provider use of communication technologies and the specific domains of patient satisfaction. The offering of a provider email address is a signifier of an aspect of the patient-provider relationship not captured by the satisfaction survey..

Aim 3: To describe primary care physician experiences with favorite patients and how such patients may influence how they provide care.

Physicians have favorite patients for many reasons. While personality and socio-demographic factors may differ, favorite patients tend to be very sick, have long time relationships with their physicians, and go through their medical challenges in a graceful manner. While physicians try to treat all of their patients the same, some favorite patients receive more access to their physicians than others, though it is difficult to untangle whether this is a result of their medical condition or favorite patient status.

Policy Implications

These findings present three important implications. The frequent provider use of cellphone and email to communication with patients outside of the clinic setting and provider acknowledgement that they would use email to communicate with their patients if first contacted by their patients suggests the need for institutional guidelines for that establish expectations and boundaries in communicating with patients outside of the office, especially when time spent communicating with patients is such a concern. That providers who give their email addresses had significantly higher satisfaction scores than their counterparts who do not and the indirect finding of patient interest in communicating with physicians using these communication technologies also suggest a need to reconsider existing restrictions on email communication between patients and providers.

For healthcare providers, particularly physicians, the satisfaction finding hints at the importance of the patient-provider relationship in a patient's satisfaction with their provider. The coming shift to secure-messaging suggest that patient use of electronic communication will likely increase in the coming

years and providers will need to figure out how best to communicate and deliver care electronically and overcome concerns regarding time, boundaries, and patient understanding.

For patients, the survey results on how providers communicate outside of the office as well as the interviews on favorite patients suggest a bidirectional relationship between patients and physicians. Patients should be reassured that their physicians take their preferences into account and empowered to discuss how they want to communicate and approach their care with their physicians. Further, that most favorite patients have long term relationships with their physicians and their physicians know these patients well as a result, often in ways critical to their care, highlights the importance of having a usual source of care and primary care physician.

Directions for Future Research

This work points toward several areas of future research, including an expansion of this manuscript to better examine the nuances of the relationship between patient satisfaction and provider communication behaviors. The increasing prevalence of electronic health record systems with secure messaging capabilities is another natural next step. Future work could examine the effects of such a shift on physician workload, patient satisfaction, and the patient-physician relationship. Additional work focusing on the relational aspect of patient-physician communication could include surveying a large cohort of physicians on their perspectives on, and experiences with, favorite patients, as well as their decision making approaches to patient-physician communication outside of the clinic setting.

Appendix 1: Sensitivity Analysis Separating Academic and Community Providers

Table 2.1: Use of cellphone, email, and text-messaging

	Community	Academic	P-value
Cellphone	49%	71%	0.07
Email	27%	81%	<0.001
Text	2%	10%	0.12
Give cell	35%	48%	0.27
Give email	49%	86%	0.002

Table 2.2: Provider concerns regarding communication with patient

Community Providers

	Not Important	Somewhat Important	Important
Data security	18%	6%	76%
Time	16%	12%	72%
Patient understanding	3%	11%	86%
Patient preference	14%	24%	62%
Regulation	7%	20%	73%
Missing a message	7%	12%	81%

Academic Providers

	Not Important	Somewhat Important	Important
Data security	26%	37%	37%
Time	5%	21%	74%
Patient understanding	21%	11%	68%
Patient preference	11%	21%	68%
Regulation	37%	21%	42%
Missing a message	0%	12%	89%

Table 2.3: Regression correlates of cellphone and email use

Community Providers

	Cellphone Use		Email Use	
	OR	95% CI	OR	95% CI
Given cellphone number	17.08*	3.39-86.18		
Given email address			9.44**	2.09-42.67
Female	1.94	0.49-7.63	1.40	0.38-5.14
Graduation year (reference: pre-1980)				
1980-1989	0.13	0.01-2.00	1.55	0.13-18.04
1990-1999	0.27	0.02-3.12	1.12	0.13-9.51
2000+	0.37	0.03-5.32	0.68	0.06-8.08
Internal Medicine	0.38	0.06-2.35	1.20	0.24-6.06
Ob-Gyn	0.10	0.00-2.07	1.78	0.08-39.22
Family Medicine	1.20	0.19-7.61	0.83	0.00-1.64

Appendix 2: Interview Guide

Hello, Dr. X. Thank you for speaking with me today. As you already know, I am from the Johns Hopkins Bloomberg School of Public Health and would like to talk to you about a study on provider experiences with their favorite patients. We ask you to join this study because you are a primary care provider from GIM who can provide thoughtful answers on the topic.

As a thank you for your participation, we will compensate you for your time with a \$50 gift card.

If it's OK with you, I would like to take notes and record our conversation so I can remember your responses as best as I can. Do I have your permission to do so?

May I begin?

I want to start by exploring what makes a good day for you— when you are right at the start of a patient care session, say, the beginning of the day, is there anything in particular that you hope for? Or look forward to?

(For example, are there certain patients will or won't be on your schedule, that the patients you see will in general have followed up with your advice and/or gotten better, that you will be able to finish your notes by the end of the session, etc.)

Now, we think that everyone has some patients that they look forward to more than others. On a typical day for you, can you tell me what makes some patients more likable than others?

Would you say these are the same traits you would identify as a favorite patient?

Can you tell me what the term favorite patient means to you, or how you define that term?

(For example, a patient who you get excited to see or who you like interacting with more than other patients? Favorite of the week vs. lifetime)

Can you tell me about some of your favorite patients?

Status/background/how long
Current/past/ranking
Personality
Words might use to describe them

How do you mean?

You mentioned - , can you tell me a little bit more?

Many doctors talk of going through an experience or a journey with a patient, was this the case with you? Can you tell me about some of these journeys?

I'm also interested in why you think that this patient is such a good match for you, or what makes this patient so appealing

Do you have sense if this patient likes you?

Likable

Like friends or not

Anything you don't like

Now (that I've heard about what these patients are like) I'm interested to hear about your interactions with your favorite patient. Can you tell me what your interactions are like?

Is there anything about these interactions that's different than how you interact with other patients?

Called by first name

Patient has phone number

Tone, length, content

Who else would typically have access like this-

Do you feel that you have benefitted from having this patient?

Has your patient benefitted from being your favorite?

Doctors are often warned about getting too attached to their patients, can you think of any downsides to your relationship with this patient?

Something about other favorites?

This is about all the questions I have for you. Is there anything you think I've missed, anything else you'd like to tell me about this patient?

If you have any questions about this or think of anything you would like to add, you may always contact me to follow up. Thank you for your time.

Bibliography

Chapter 1

1. Boland BJ, Scheitel SM, Wollan PC, Silverstein MD. Patient-physician agreement on reasons for ambulatory general medical examinations. *Mayo Clin Proc.* 1998;73(2):109–117. doi:10.1016/S0025-6196(11)63641-0.
2. Epstein RM. Making communication research matter: What do patients notice, what do patients want, and what do patients need? *Patient Education and Counseling.* 2006;60(3):272–278. doi:10.1016/j.pec.2005.11.003.
3. Bartlett EE, Grayson M, Barker R, Levine DM, Golden A, Libber S. The effects of physician communications skills on patient satisfaction; recall, and adherence. *J Chronic Dis.* 1984;37(9-10):755–764.
4. Joos SK, Hickam DH, Borders LM. Patients' desires and satisfaction in general medicine clinics. *Public Health Rep.* 1993;108(6):751–759.
5. Cousin G, Mast MS, Roter DL, Hall JA. Patient Education and Counseling. *Patient Education and Counseling.* 2012;87(2):193–197. doi:10.1016/j.pec.2011.08.004.
6. Epstein RM, Street RL Jr. *Patient-Centered Communication in Cancer Care: Promoting Healing and Reducing Suffering.* Bethesda, MD; 2007.
7. Greer RC, Cooper LA, Crews DC, Powe NR, Boulware LE. Quality of patient-physician discussions about CKD in primary care: a cross-sectional study. *Am J Kidney Dis.* 2011;57(4):583–591. doi:10.1053/j.ajkd.2010.08.027.
8. Zulman DM, Kerr EA, Hofer TP, Heisler M, Zikmund-Fisher BJ. Patient-provider concordance in the prioritization of health conditions among hypertensive diabetes patients. *J Gen Intern Med.* 2010;25(5):408–414. doi:10.1007/s11606-009-1232-1.
9. Wanzer MB, Booth-Butterfield M, Gruber K. Perceptions of health care providers' communication: relationships between patient-centered communication and satisfaction. *Health Commun.* 2004;16(3):363–383. doi:10.1207/S15327027HC1603_6.
10. Horwitz LI, Detsky AS. Physician Communication in the 21st Century To Talk or to Text? *JAMA.* 2011;305(11):1128–1129.
11. Fox S, Duggan M. *Mobile Health 2012.* 2012. Available at:

http://www.pewinternet.org/~media/Files/Reports/2012/PIP_MobileHealth2012_FINAL.pdf.

12. Roter D. The enduring and evolving nature of the patient-physician relationship. *Patient Education and Counseling*. 2000;39(1):5–15.
13. Atherton H, Sawmynaden P, Sheikh A, Majeed A. Email for clinical communication between patients/caregivers and healthcare professionals. *status: New ...*. 2012.
14. Wong RKM, Tan JSM, Drossman DA. Here“s my phone number, don”t call me: physician accessibility in the cell phone and e-mail era. *Dig Dis Sci*. 2010;55(3):662–667. doi:10.1007/s10620-009-1089-5.
15. McNabney MK, Andersen RE, Bennett RG. Nursing documentation of telephone communication with physicians in community nursing homes. *J Am Med Dir Assoc*. 2004;5(3):180–185. doi:10.1097/01.JAM.0000123027.01976.1A.
16. Spiegelman J. Instant Mobile Communication, Efficiency, and Quality of Life. *JAMA*. 2008;299(10):1179–1181. doi:10.1001/jama.299.10.1179.
17. Rosen P, Kwoh CK. Patient-physician e-mail: an opportunity to transform pediatric health care delivery. *Pediatrics*. 2007;120(4):701–706. doi:10.1542/peds.2007-1094.
18. Byrne JM, Elliott S, Firek A. Initial experience with patient-clinician secure messaging at a VA medical center. *J Am Med Inform Assoc*. 2009;16(2):267–270. doi:10.1197/jamia.M2835.
19. Pizziferri L, Kittler A, Volk LA, et al. Physicians' perceptions toward electronic communication with patients. *AMIA Annu Symp Proc*. 2003:972.
20. Kagan SH, Clarke SP, Happ MB. Head and neck cancer patient and family member interest in and use of E-mail to communicate with clinicians. *Head Neck*. 2005;27(11):976–981. doi:10.1002/hed.20263.
21. Goldman RD. Community physicians' attitudes toward electronic follow-up after an emergency department visit. *Clin Pediatr (Phila)*. 2005;44(4):305–309.
22. Patt MR, Houston TK, Jenckes MW, Sands DZ, Ford DE. Doctors Who Are Using E-mail With Their Patients: a Qualitative Exploration. *J Med Internet Res*. 2003;5(2):e9. doi:10.2196/jmir.5.2.e9.
23. Chen MA, Hollenberg JP, Michelen W, Peterson JC, Casalino LP. Patient care outside of office visits: a primary care physician time

- study. *J Gen Intern Med.* 2011;26(1):58–63. doi:10.1007/s11606-010-1494-7.
24. Gaster B, Knight CL, DeWitt DE, Sheffield JVL, Assefi NP, Buchwald D. Physicians' use of and attitudes toward electronic mail for patient communication. *J Gen Intern Med.* 2003;18(5):385–389.
 25. Hobbs J, Wald J, Jagannath YS, et al. Opportunities to enhance patient and physician e-mail contact. *Int J Med Inform.* 2003;70(1):1–9.
 26. Hanna L, Fairhurst K. Using information and communication technologies to consult with patients in Victorian primary care: the views of general practitioners. *Aust J Prim Health.* 2013;19(2):166–170. doi:10.1071/PY11153.
 27. Kagan SH, Clarke SP, Happ MB. Surgeons“ and nurses” use of e-mail communication with head and neck cancer patients. *Head Neck.* 2005;27(2):108–113. doi:10.1002/hed.20119.
 28. Kia KF, Tavakkoli A, Ellis CN. Clinical e-mail in an academic dermatology setting. *J Am Acad Dermatol.* 2006;54(6):1019–1024. doi:10.1016/j.jaad.2006.02.046.
 29. Siva C, Lawlor K, Smarr K, Ge B, Fleming D. E-mail communication with patients: a survey of the American College of Physicians, Missouri Chapter. *Mo Med.* 2011;108(2):136–140.
 30. Siva C, Smarr KL, Hanson KD, Parikh M, Lawlor K, Ge B. Internet use and e-mail communications between patients and providers: a survey of rheumatology outpatients. *J Clin Rheumatol.* 2008;14(6):318–323. doi:10.1097/RHU.0b013e318190b636.
 31. Hsiao AL, Bazy-Asaad A, Tolomeo C, Edmonds D, Belton B, Benin AL. Secure web messaging in a pediatric chronic care clinic: a slow takeoff of "kids' airmail". *Pediatrics.* 2011;127(2):e406–13. doi:10.1542/peds.2010-1086.
 32. Robert G Brooks NM. Physicians' Use of Email With Patients: Factors Influencing Electronic Communication and Adherence to Best Practices. *J Med Internet Res.* 2006;8(1):e2. doi:10.2196/jmir.8.1.e2.
 33. Department of Health and Human Services. Health Information Privacy. *hhs.gov.* 2014. Available at: <http://www.hhs.gov/ocr/privacy/>.
 34. Hardiman M, Edwards T. *Clarifying the Confusion About HIPAA-Compliant Texting.* 2013. Available at: <https://www.perfectserve.com/hospital/docs/PerfectServe->

Clarifying-Confusion-About-HIPAA-Compliant-Electronic-Communication.pdf.

35. Browne K, Roseman D, Shaller D, Edgman-Levitan S. Analysis & commentary. Measuring patient experience as a strategy for improving primary care. *Health Aff (Millwood)*. 2010;29(5):921–925. doi:10.1377/hlthaff.2010.0238.
36. Wolfe A. Institute of Medicine Report: Crossing the Quality Chasm: A New Health Care System for the 21st Century. *Policy Politics Nursing Practice*. 2001;2(3):233–235. doi:10.1177/152715440100200312.
37. Sofaer S, Firminger K. Patient perceptions of the quality of health services. *Annu Rev Public Health*. 2005;26(1):513–559. doi:10.1146/annurev.publhealth.25.050503.153958.
38. Millenson ML, Macri J. *Will the Affordable Care Act Move Patient-Centeredness to Center Stage?*; 2012.
39. Centers for Medicare Medicaid Services. CAHPS Survey for Accountable Care Organizations. *acocahpscmsgov*.
40. Schiller JH, Christner JG, Stansfield RB. What parents want from emails with their pediatrician: Implications for teaching communication skills. *Patient education and* 2013.
41. Thornton RLJ, Powe NR, Roter D, Cooper LA. Patient–physician social concordance, medical visit communication and patients’ perceptions of health care quality. *Patient Education and Counseling*. 2011;85(3):e201–e208. doi:10.1016/j.pec.2011.07.015.
42. Paasche-Orlow M, Roter D. The Communication Patterns of Internal Medicine and Family Practice Physicians. *J Am Board Fam Pract*. 2003;16(6):485–493. doi:10.3122/jabfm.16.6.485.
43. Orbuch TL, Sprecher S. Attraction and Interpersonal Relationships. In: *Handbook of Social Psychology*. Handbooks of Sociology and Social Research. Springer US; 2006:339–362. doi:10.1007/0-387-36921-X_14.
44. Winkielman P, Berridge K. Irrational Wanting and Subrational Liking: How Rudimentary Motivational and Affective Processes Shape Preferences and Choices. *Political Psychology*. 2003;24(4):657–680. doi:10.1046/j.1467-9221.2003.00346.x.
45. Sprecher S, Regan PC. Liking Some Things (in Some People) more than Others: Partner Preferences in Romantic Relationships and Friendships. *Journal of Social and Personal Relationships*. 2002;19(4):463–481. doi:10.1177/0265407502019004048.
46. Eastwick PW, Luchies LB, Finkel EJ, Hunt LL. The predictive validity

- of ideal partner preferences: a review and meta-analysis. *Psychol Bull.* 2014;140(3):623–665. doi:10.1037/a0032432.
47. Blumberg HH. On being liked more than you like. *Journal of Personality and Social Psychology.* 1969;11(2):121–128. doi:10.1037/h0027038.
 48. Choi KS, Deek FP, Im I. Pair dynamics in team collaboration. *Computers in Human Behavior.* 2009;25(4):844–852. doi:10.1016/j.chb.2008.09.005.
 49. Katira N, Williams L, Wiebe E, Miller C, Balik S, Gehringer E. On understanding compatibility of student pair programmers. *Proceedings of the th SIGCSE technical symposium on Computer science education.* 2004;36(1):7–11.
 50. Hayes JA, Gelso CJ. Clinical implications of research on countertransference: science informing practice. *J Clin Psychol.* 2001;57(8):1041–1051. doi:10.1002/jclp.1072.
 51. Kealy D, Ogrodniczuk JS. Narcissistic interpersonal problems in clinical practice. *Harv Rev Psychiatry.* 2011;19(6):290–301. doi:10.3109/10673229.2011.632604.
 52. Groves JE. Taking care of the hateful patient. *N Engl J Med.* 1978;298(16):883–887. doi:10.1056/NEJM197804202981605.
 53. Strous RD, Ulman A-M, Kotler M. The hateful patient revisited: Relevance for 21st century medicine. *Eur J Intern Med.* 2006;17(6):387–393. doi:10.1016/j.ejim.2006.04.002.
 54. McDonald PS, O'Dowd TC. The heartsink patient: a preliminary study. *Fam Pract.* 1991;8(2):112–116.
 55. Boland R. The “problem patient”: modest advice for frustrated clinicians. *R I Med J (2013).* 2014;97(6):29–32.
 56. Block AJ. Beware of the VIP syndrome. *CHEST Journal.* 1993.
 57. Stoudemire A, Rhoads JM. When the doctor needs a doctor: special considerations for the physician-patient. *Ann Intern Med.* 1983;98(5 Pt 1):654–659.

Chapter 2:

1. Boland BJ, Scheitel SM, Wollan PC, Silverstein MD. Patient-physician agreement on reasons for ambulatory general medical examinations. *Mayo Clin Proc.* 1998;73(2):109–117. doi:10.1016/S0025-6196(11)63641-0.
2. Greer RC, Cooper LA, Crews DC, Powe NR, Boulware LE. Quality of patient-physician discussions about CKD in primary care: a cross-sectional study. *Am J Kidney Dis.* 2011;57(4):583–591. doi:10.1053/j.ajkd.2010.08.027.
3. Zulman DM, Kerr EA, Hofer TP, Heisler M, Zikmund-Fisher BJ. Patient-provider concordance in the prioritization of health conditions among hypertensive diabetes patients. *J Gen Intern Med.* 2010;25(5):408–414. doi:10.1007/s11606-009-1232-1.
4. Joos SK, Hickam DH, Borders LM. Patients' desires and satisfaction in general medicine clinics. *Public Health Rep.* 1993;108(6):751–759.
5. Wanzer MB, Booth-Butterfield M, Gruber K. Perceptions of health care providers' communication: relationships between patient-centered communication and satisfaction. *Health Commun.* 2004;16(3):363–383. doi:10.1207/S15327027HC1603_6.
6. Zolnieriek KBH, Dimatteo MR. Physician communication and patient adherence to treatment: a meta-analysis. *Medical Care.* 2009;47(8):826–834. doi:10.1097/MLR.0b013e31819a5acc.
7. Horwitz LI, Detsky AS. Physician Communication in the 21st Century To Talk or to Text? *JAMA.* 2011;305(11):1128–1129.
8. Fox S, Duggan M. *Mobile Health 2012.* 2012. Available at: http://www.pewinternet.org/~media/Files/Reports/2012/PIP_MobileHealth2012_FINAL.pdf.
9. Kagan SH, Clarke SP, Happ MB. Surgeons“ and nurses” use of e-mail communication with head and neck cancer patients. *Head Neck.* 2005;27(2):108–113. doi:10.1002/hed.20119.
10. Hsiao AL, Bazy-Asaad A, Tolomeo C, Edmonds D, Belton B, Benin AL. Secure web messaging in a pediatric chronic care clinic: a slow takeoff of "kids' airmail". *Pediatrics.* 2011;127(2):e406–13. doi:10.1542/peds.2010-1086.
11. Robert G Brooks NM. Physicians' Use of Email With Patients: Factors Influencing Electronic Communication and Adherence to Best Practices. *J Med Internet Res.* 2006;8(1):e2. doi:10.2196/jmir.8.1.e2.
12. Chen C, Garrido T, Chock D, Okawa G, Liang L. The Kaiser Permanente

- Electronic Health Record: transforming and streamlining modalities of care. *Health Aff (Millwood)*. 2009;28(2):323–333. doi:10.1377/hlthaff.28.2.323.
13. Singh H, Fox SA, Petersen NJ, Shethia A, Street RL. Older patients' enthusiasm to use electronic mail to communicate with their physicians: cross-sectional survey. *J Med Internet Res*. 2009;11(2):e18. doi:10.2196/jmir.1143.
 14. Virji A, Yarnall KS, Krause KM, et al. Use of email in a family practice setting: opportunities and challenges in patient- and physician-initiated communication. *BMC Medicine*. 2006;4(1):18. doi:10.1186/1741-7015-4-18.
 15. Menachemi N, Langley A, Brooks RG. The use of information technologies among rural and urban physicians in Florida. *J Med Syst*. 2007;31(6):483–488.
 16. Kagan SH, Clarke SP, Happ MB. Head and neck cancer patient and family member interest in and use of E-mail to communicate with clinicians. *Head Neck*. 2005;27(11):976–981. doi:10.1002/hed.20263.
 17. Guth AA, Diflo T. “You've got mail!”: the role of e-mail in clinical breast surgical practice. *Breast*. 2006;15(6):713–717. doi:10.1016/j.breast.2006.02.004.
 18. Gaster B, Knight CL, DeWitt DE, Sheffield JVL, Assefi NP, Buchwald D. Physicians' use of and attitudes toward electronic mail for patient communication. *J Gen Intern Med*. 2003;18(5):385–389.
 19. Menachemi N, Prickett CT, Brooks RG. The use of physician-patient email: a follow-up examination of adoption and best-practice adherence 2005–2008. *J Med Internet Res*. 2011;13(1):e23. doi:10.2196/jmir.1578.
 20. Kittler AF, Wald JS, Volk LA, et al. The role of primary care non-physician clinic staff in e-mail communication with patients. *Int J Med Inform*. 2004;73(4):333–340. doi:10.1016/j.ijmedinf.2004.02.004.
 21. Bishop TF, Mendelsohn JL, Casalino LP. Electronic communication improves access, but barriers to its widespread adoption remain. *Health Aff (Millwood)*. 2013;32(8):1361–1367. doi:10.1377/hlthaff.2012.1151.
 22. Pearl R. Kaiser permanente northern california: current experiences with internet, mobile, and video technologies. *Health Aff (Millwood)*. 2014;33(2):251–257. doi:10.1377/hlthaff.2013.1005.
 23. de Jong CC, Ros W, Schrijvers G. ... Health Outcomes of Internet-Based Asynchronous Communication Between Health Providers and Patients With a Chronic Condition: A Systematic Review. *Journal of medical Internet* 2014.

24. Kane B, Sands DZ. Guidelines for the clinical use of electronic mail with patients. The AMIA Internet Working Group, Task Force on Guidelines for the Use of Clinic-Patient Electronic Mail. *J Am Med Inform Assoc*. 1998;5(1):104–111. doi:10.1136/jamia.1998.0050104.
25. Siva C, Lawlor K, Smarr K, Ge B, Fleming D. E-mail communication with patients: a survey of the American College of Physicians, Missouri Chapter. *Mo Med*. 2011;108(2):136–140.
26. Peleg R, Avdalimov A, Freud T. Providing cell phone numbers and email addresses to Patients: the physician's perspective. *BMC Research Notes*. 2011;4(1):76. doi:10.1186/1756-0500-4-76.
27. Peleg R, Nazarenko E. Providing cell phone numbers and e-mail addresses to patients: The patient's perspective, a cross sectional study. *Isr J Health Policy Res*. 2012;1(1):32. doi:10.1186/2045-4015-1-32.
28. Borden WB, Redberg RF, Mushlin AI, Dai D, Kaltenbach LA, Spertus JA. Patterns and intensity of medical therapy in patients undergoing percutaneous coronary intervention. *JAMA*. 2011;305(18):1882–1889. doi:10.1001/jama.2011.601.
29. Boukus ER, Grossman JM, O'Malley AS. Physicians slow to e-mail routinely with patients. *Issue Brief Cent Stud Health Syst Change*. 2010;(134):1–5.

Chapter 3

1. Centers for Medicare Medicaid Services. Quality Measures and Performance Standards. CMS. 2013. Available at: <http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payments/shared-savings-program/QualityMeasuresStandards.html>. Accessed January 2, 2014.
2. Schiller JH, Christner JG, Stansfield RB. What parents want from emails with their pediatrician: Implications for teaching communication skills. *Patient education and* 2013.
3. Cousin G, Mast MS, Roter DL, Hall JA. Patient Education and Counseling. *Patient Education and Counseling*. 2012;87(2):193–197. doi:10.1016/j.pec.2011.08.004.
4. Joos SK, Hickam DH, Borders LM. Patients' desires and satisfaction in general medicine clinics. *Public Health Rep*. 1993;108(6):751–759.
5. Epstein RM. Making communication research matter: What do patients notice, what do patients want, and what do patients need? *Patient Education and Counseling*. 2006;60(3):272–278. doi:10.1016/j.pec.2005.11.003.
6. Thornton RLJ, Powe NR, Roter D, Cooper LA. Patient–physician social concordance, medical visit communication and patients' perceptions of health care quality. *Patient Education and Counseling*. 2011;85(3):e201–e208. doi:10.1016/j.pec.2011.07.015.
7. Paasche-Orlow M, Roter D. The Communication Patterns of Internal Medicine and Family Practice Physicians. *J Am Board Fam Pract*. 2003;16(6):485–493. doi:10.3122/jabfm.16.6.485.
8. Bartlett EE, Grayson M, Barker R, Levine DM, Golden A, Libber S. The effects of physician communications skills on patient satisfaction; recall, and adherence. *J Chronic Dis*. 1984;37(9-10):755–764.
9. Epstein RM, Street RL Jr. *Patient-Centered Communication in Cancer Care: Promoting Healing and Reducing Suffering*. Bethesda, MD; 2007.
10. Boland BJ, Scheitel SM, Wollan PC, Silverstein MD. Patient-physician agreement on reasons for ambulatory general medical examinations. *Mayo Clin Proc*. 1998;73(2):109–117. doi:10.1016/S0025-6196(11)63641-0.
11. Roter DL, Hall JA, Katz NR. Patient-physician communication: A descriptive summary of the literature. *Patient Education and*

- Counseling*. 1988;12(2):99–119. doi:10.1016/0738-3991(88)90057-2.
12. Piette JD, Schillinger D, Potter MB, Heisler M. Dimensions of Patient-provider Communication and Diabetes Self-care in an Ethnically Diverse Population. *J Gen Intern Med*. 2003;18(8):624–633. doi:10.1046/j.1525-1497.2003.31968.x.
 13. Street RL, Gordon HS, Ward MM, Krupat E, Kravitz RL. Patient participation in medical consultations: why some patients are more involved than others. *Medical Care*. 2005;43(10):960–969.
 14. Elder NC, Barney K. “But what does it mean for me?” Primary care patients' communication preferences for test results notification. *Jt Comm J Qual Patient Saf*. 2012;38(4):168–176.
 15. Ledlow GR, O'Hair HD, Moore S. Predictors of communication quality: The patient, provider, and nurse call center triad. *Health Commun*. 2003.
 16. Ye J, Rust G, Fry-Johnson Y, Strothers H. E-mail in patient–provider communication: A systematic review. *Patient Education and Counseling*. 2010;80(2):266–273. doi:10.1016/j.pec.2009.09.038.
 17. Ralston JD, Martin DP, Anderson ML, et al. Group health cooperative's transformation toward patient-centered access. *Med Care Res Rev*. 2009;66(6):703–724. doi:10.1177/1077558709338486.
 18. Leong SL, Gingrich D, Lewis PR, Mauger DT, George JH. Enhancing doctor-patient communication using email: a pilot study. *J Am Board Fam Pract*. 2005;18(3):180–188.
 19. Stalberg P, Yeh M, Ketteridge G, Delbridge H, Delbridge L. E-mail access and improved communication between patient and surgeon. *Arch Surg*. 2008;143(2):164–8– discussion 168–9. doi:10.1001/archsurg.2007.31.
 20. Andreassen HK. What does an e-mail address add? - Doing health and technology at home. *Soc Sci Med*. 2011;72(4):521–528. doi:10.1016/j.socscimed.2010.11.026.
 21. Singh H, Fox SA, Petersen NJ, Shethia A, Street RL. Older patients' enthusiasm to use electronic mail to communicate with their physicians: cross-sectional survey. *J Med Internet Res*. 2009;11(2):e18. doi:10.2196/jmir.1143.
 22. Menachemi N, Prickett CT, Brooks RG. The use of physician-patient email: a follow-up examination of adoption and best-practice adherence 2005-2008. *J Med Internet Res*. 2011;13(1):e23.

doi:10.2196/jmir.1578.

23. Kittler AF, Wald JS, Volk LA, et al. The role of primary care non-physician clinic staff in e-mail communication with patients. *Int J Med Inform.* 2004;73(4):333–340. doi:10.1016/j.ijmedinf.2004.02.004.
24. Dyer N, Sorra JS, Smith SA, Cleary PD, Hays RD. Psychometric properties of the Consumer Assessment of Healthcare Providers and Systems (CAHPS®) Clinician and Group Adult Visit Survey. *Medical Care.* 2012;50 Suppl:S28–34. doi:10.1097/MLR.0b013e31826cbc0d.
25. Sofaer S, Firminger K. Patient perceptions of the quality of health services. *Annu Rev Public Health.* 2005;26(1):513–559. doi:10.1146/annurev.publhealth.25.050503.153958.
26. The Robert Wood Johnson Foundation. *How to Report Results of the CAHPS Clinician & Group Survey.* 2012. Available at: <https://cahps.ahrq.gov/surveys-guidance/cg/cgkit/HowtoReportResultsofCGCAHPS080610FINAL.pdf>.
27. Hassol A, Walker JM, Kidder D, et al. Patient experiences and attitudes about access to a patient electronic health care record and linked web messaging. *J Am Med Inform Assoc.* 2004;11(6):505–513. doi:10.1197/jamia.M1593.
28. Chen C, Garrido T, Chock D, Okawa G, Liang L. The Kaiser Permanente Electronic Health Record: transforming and streamlining modalities of care. *Health Aff (Millwood).* 2009;28(2):323–333. doi:10.1377/hlthaff.28.2.323.
29. Baptist AP, Thompson M, Grossman KS, Mohammed L, Sy A, Sanders GM. Social media, text messaging, and email-preferences of asthma patients between 12 and 40 years old. *J Asthma.* 2011;48(8):824–830. doi:10.3109/02770903.2011.608460.
30. Patt MR, Houston TK, Jenckes MW, Sands DZ, Ford DE. Doctors Who Are Using E-mail With Their Patients: a Qualitative Exploration. *J Med Internet Res.* 2003;5(2):e9. doi:10.2196/jmir.5.2.e9.
31. McNabney MK, Andersen RE, Bennett RG. Nursing documentation of telephone communication with physicians in community nursing homes. *J Am Med Dir Assoc.* 2004;5(3):180–185. doi:10.1097/01.JAM.0000123027.01976.1A.
32. Patt MR, Houston TK, Jenckes MW, Sands DZ, Ford DE. Journal of medical Internet research Volume: 5 ISSN: 1438-8871 ISO Abbreviation: J. Med. Internet Res. Publication Date: 2003 Apr-Jun. *Detail.*

33. Liederman EM, Lee JC, Baquero VH, Seites PG. Patient-physician web messaging. The impact on message volume and satisfaction. *J Gen Intern Med*. 2005;20(1):52–57. doi:10.1111/j.1525-1497.2005.40009.x.
34. Jerant A, Fenton JJ, Bertakis KD, Franks P. Satisfaction with health care providers and preventive care adherence: a national study. *Medical Care*. 2014;52(1):78–85. doi:10.1097/MLR.0000000000000021.
35. Quigley DD, Farley DO, Brown JA, Elliott MN, de Vries H, Hays RD. *Development of Supplemental Quality Improvement Items for the Consumer Assessment of Healthcare Providers and Systems (CAHPS)*. Santa Monica, CA; 2006.
36. Drake KM, Hargraves JL, Lloyd S, Gallagher PM, Cleary PD. The Effect of Response Scale, Administration Mode, and Format on Responses to the CAHPS Clinician and Group Survey. *Health Services Research*. 2014:n/a–n/a. doi:10.1111/1475-6773.12160.
37. Boulding W, Glickman SW, Manary MP, Schulman KA, Staelin R. Relationship between patient satisfaction with inpatient care and hospital readmission within 30 days. *Am J Manag Care*. 2011;17(1):41–48.
38. Millenson ML, Macri J. *Will the Affordable Care Act Move Patient-Centeredness to Center Stage?*; 2012.

Chapter 4:

1. Orbuch TL, Sprecher S. Attraction and Interpersonal Relationships. In: *Handbook of Social Psychology*. Handbooks of Sociology and Social Research. Springer US; 2006:339–362. doi:10.1007/0-387-36921-X_14.
2. Winkielman P, Berridge K. Irrational Wanting and Subrational Liking: How Rudimentary Motivational and Affective Processes Shape Preferences and Choices. *Political Psychology*. 2003;24(4):657–680. doi:10.1046/j.1467-9221.2003.00346.x.
3. Sprecher S, Regan PC. Liking Some Things (in Some People) more than Others: Partner Preferences in Romantic Relationships and Friendships. *Journal of Social and Personal Relationships*. 2002;19(4):463–481. doi:10.1177/0265407502019004048.
4. Eastwick PW, Luchies LB, Finkel EJ, Hunt LL. The predictive validity of ideal partner preferences: a review and meta-analysis. *Psychol Bull*. 2014;140(3):623–665. doi:10.1037/a0032432.
5. Blumberg HH. On being liked more than you like. *Journal of Personality and Social Psychology*. 1969;11(2):121–128. doi:10.1037/h0027038.
6. Choi KS, Deek FP, Im I. Pair dynamics in team collaboration. *Computers in Human Behavior*. 2009;25(4):844–852. doi:10.1016/j.chb.2008.09.005.
7. Katira N, Williams L, Wiebe E, Miller C, Balik S, Gehringer E. On understanding compatibility of student pair programmers. *Proceedings of the th SIGCSE technical symposium on Computer science education*. 2004;36(1):7–11.
8. Nadelson C, Notman MT. Boundaries in the doctor-patient relationship. *Theor Med Bioeth*. 2002;23(3):191–201.
9. Folman RZ. Therapist-patient sex: Attraction and boundary problems. *Psychotherapy: Theory, Research, Practice, Training*. 1991;28(1):168–173. doi:10.1037/0033-3204.28.1.168.
10. Gabbard GO, Nadelson C. Professional boundaries in the physician-patient relationship. *JAMA*. 1995.
11. Marois J. Receiving gifts from patients: a pragmatic shade of grey. *BC Med J*. 2010.
12. Block AJ. Beware of the VIP syndrome. *CHEST Journal*. 1993.
13. Weintraub W. *The VIP Syndrome: a Clinical Study in Hospital Psychiatry*. 1964.; 2012:457–469. doi:10.1097/NMD.0b013e3182532326.
14. Nisselle P. Danger zone. When boundaries are crossed in the doctor-patient relationship. *Aust Fam Physician*. 2000;29(6):541–544.

15. Smolar AI. Reflections on gifts in the therapeutic setting: the gift from patient to therapist. *Am J Psychother.* 2002;56(1):27–45.
16. Caddell A, Hazelton L. Accepting gifts from patients. *Can Fam Physician.* 2013;59(12):1259–60– e523–5.
17. Lyckholm LJ. Should Physicians Accept Gifts From Patients? *JAMA.* 1998;280(22):1944–1946. doi:10.1001/jama.280.22.1944.
18. Spence SA. Patients bearing gifts: are there strings attached? *BMJ : British Medical Journal.* 2005.
19. Boland R. The “problem patient”: modest advice for frustrated clinicians. *R I Med J (2013).* 2014;97(6):29–32.
20. Strous RD, Ulman A-M, Kotler M. The hateful patient revisited: Relevance for 21st century medicine. *Eur J Intern Med.* 2006;17(6):387–393. doi:10.1016/j.ejim.2006.04.002.
21. O'Dowd TC. Five years of heartsink patients in general practice. *BMJ : British Medical Journal.* 1988;297(6647):528.
22. Groves JE. Taking care of the hateful patient. *N Engl J Med.* 1978;298(16):883–887. doi:10.1056/NEJM197804202981605.
23. McDonald PS, O'Dowd TC. The heartsink patient: a preliminary study. *Fam Pract.* 1991;8(2):112–116.
24. Malterud K. Qualitative research: standards, challenges, and guidelines. *The Lancet.* 2001;358(9280):483–488. doi:10.1016/S0140-6736(01)05627-6.
25. Hayes JA, Gelso CJ. Clinical implications of research on countertransference: science informing practice. *J Clin Psychol.* 2001;57(8):1041–1051. doi:10.1002/jclp.1072.
26. Guzman JA, Sasidhar M, Stoller JK. Caring for VIPs: nine principles. *Cleve Clin J Med.* 2011;78(2):90–94. doi:10.3949/ccjm.78a.10113.
27. Stoudemire A, Rhoads JM. When the doctor needs a doctor: special considerations for the physician-patient. *Ann Intern Med.* 1983;98(5 Pt 1):654–659.

Curriculum Vitae

Joy L. Lee, MS

DEMOGRAPHIC AND PERSONAL INFORMATION

Current Appointment

PhD Candidate, Department of Health Policy & Management, Johns Hopkins Bloomberg School of Public Health

Personal Data

Joy L. Lee, PhD, MS
Department of Health Policy & Management
Hampton House, Room 326
624 North Broadway
Baltimore, MD 21205-1901
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Education:

2003- 2007 B.A. in Sociology with Honors
Bowdoin College, Brunswick, ME
2009- 2011 M.S. in Health Policy & Management
Harvard T. Chan School of Public Health, Boston, MA
2011- 2015 PhD in Health Services Research and Policy
Johns Hopkins Bloomberg School of Public Health,
Baltimore, MD

Professional Experience:

Johns Hopkins University and AIG Collaboration **Fall 2014- Present**
Project Manager

- Oversee coordination of six Johns Hopkins University research teams with \$725,000 budget
- Serve as liaison between AIG work groups and expert research teams
- Evaluate mortality trends, prediction, and novel detection technology in cancer research
- Responsible for synthesizing and presenting research results to AIG

Division of Pharmacoepidemiology and Pharmacoconomics **2007- 2014**
Brigham And Women's Hospital, Harvard Medical School

Research Fellow **2011- 2014**

- In collaboration with CVS Health, designed a large, national web survey of the off- and on-line health behaviors and preferences of consumers with chronic conditions
- Analyzed survey results and took lead in drafting manuscripts currently under review; will be first-author on at least 2 related publications
- Designed and conducted two systematic reviews evaluating the effects of insurance benefit design on medication adherence and spending

Research Assistant**2007- 2011**

- As project manager, oversaw randomization of clinical trial evaluating the provision of free medications to patients after myocardial infarction
- Administered and evaluated a phone survey of pharmaceutical manufacturer-sponsored patient assistance programs

Also contribute to the management of Division activities, including:

- Organizing and creating a website depository for Division databases; training faculty and staff on use of the website
- Preparing Institutional Review Board documents for a dozen Division studies
- Facilitating the recruitment, hiring, and training of two research assistants

**Community Catalyst, a health advocacy organization Summer 2010
Policy Intern**

- Prepared institutional comments to the Food & Drug Administration's Transparency Taskforce
- Drafted 4 policy memos on healthcare, including state Medicaid cost-savings strategies
- Disseminated research findings through the organization's PostScript blog

Additional Professional Experience.**Patient Experience and Perceptions with Social Media
Present****2014-**

In collaboration with Harvard, George Washington, and UC San Francisco Schools of Medicine, designed a multi-site survey on social media use and perceptions of the ethics of social media use by providers among primary care patients. Advised research team on survey methods and responsible for data analysis. Expected to be co-author on at least 2 related publications.

**Patient Satisfaction and Communication Technologies
Present****2014-**

Dissertation thesis examining the association between patient satisfaction and provider use of cellphone, email, and text-message to communicate with patients. Designed a provider survey on provider communication behaviors. Work currently undergoing data analysis.

Healthcare Conversations on Twitter**2013- 2014**

An interdisciplinary collaboration at Johns Hopkins University conducting a content analysis of healthcare-related conversations on Twitter to identify how the social media tool is being used for health purposes. Contributed methodological expertise in data analysis, and took primary role in drafting manuscript, resulted in first-authorship on published article.

RESEARCH ACTIVITIES

Publications:

Peer-reviewed Original Science Research

1. Choudhry NK, **Lee JL**, Agnew-Blais J, Shrank WH. Drug-company sponsored pharmacy assistance programs: policy implications from a cross-sectional survey. *Health Affairs* 2009; 28: 830-834.
2. Kesselheim AS, Misono A, **Lee JL**, Stedman MR, Brookhart MA, Choudhry NK, Shrank WH. The clinical equivalence Of generic and brand-name drugs used in cardiovascular disease: A systematic review. *JAMA* 2008; 300:2514-2526.
3. Choudhry NK, Shrank WH, Levin R, **Lee JL**, Jan S, Brookhart MA, Solomon DH. Measuring concurrent adherence to multiple related medications. *American Journal of Managed Care* 2009; 15: 457-464.
4. Schneeweiss S, Korzenik J, Solomon DH, Canning C, **Lee JL**, Bressler B. Infliximab and other immunomodulating drugs in patients with inflammatory bowel disease and the risk of serious bacterial infections. *Aliment Pharmacol & Ther* 2009;30:253-64.
5. Kesselheim AS, Misono A, Gagne J, Bubrick EJ, **Lee JL**, Stedman MR, Brookhart MA, Choudhry NK, Shrank WH. Seizure outcomes following use of generic vs brand-name antiepileptic drugs: a systematic review and meta-analysis. *Drugs* 2010; 70: 605-621.
6. Solomon DH, Rassen JA, Glynn RJ, **Lee JL**, Levin R, Schneeweiss S. The comparative safety of analgesics in older adults with arthritis. *Archives of Internal Medicine* 2010; 170(22): 1968-76.
7. Solomon DH, Rassen JA, Glynn RJ, Garneau K, Levin R, **Lee JL**, Schneeweiss S. The comparative safety of opioids for nonmalignant pain in older adults. *Archives of Internal Medicine* 2010; 170(22): 1979-86.
8. Kesselheim AS, **Lee JL**, Servi AS, Choudhry NK. Conflict of interest in oncology publications: a survey of disclosure policies and statements. *Cancer* 2011; 118(1): 188-195.
9. Bowry AD, Shrank WH, **Lee JL**, Stedman M, Choudhry NK. A systematic review of adherence to cardiovascular medications in resource-limited settings. *Journal of General Internal Medicine* 2011; 26(12): 1479-91.
10. Choudhry NK, Avorn JL, Glynn RJ, Antman EM, Schneeweiss S, Toscano M, Reisman L, Fernandes J, Spettell C, **Lee JL**, Levin R, Brennan T, Shrank WH. Full coverage for preventive medications after myocardial infarction. *New England Journal of Medicine* 2011; 365(22):2088-97.
11. **Lee JL**, Fischer MA, Shrank WH, Polinski JM, Choudhry NK. A systematic review of reference pricing: Implications for U.S. prescription drug spending. 2012 *American Journal of Managed Care* 2012 (epub).
12. **Lee JL**, Maciejewski ML, Raju SS, Shrank WH, Choudhry NK. Value-based insurance design: Quality improvement but no cost savings. *Health Affairs* 2013; 32(7): 1251-1257.
13. **Lee JL**, DeCamp M, Dredze M, Chisolm MS, Berger ZD. What are health-related users tweeting? A qualitative content analysis of health-related messages on Twitter. *Journal of Medical Internet Research* 2014; 16(10): e237.

Original Science Research Under Peer Review and In Preparation

1. **Lee JL**, Choudhry NK, Matlin O, Brennan TA, Shrank WH. Preferences and concerns around using internet online communications to manage chronic conditions. 2015 [under review].
2. **Lee JL**, Choudhry NK, Wu AW, Matlin O, Brennan TA, Shrank WH. Patient use of email, Facebook, and provider websites to communicate with healthcare providers. 2015 [under review].
3. **Lee JL**, Dy SM, Kravet SJ, Ashar BH, Nesson T, Wu AW. Doctor- What's your email address? Cross-sectional survey results on use of cellphone, email, and text-messaging in primary care. 2015 [under review].
4. **Lee JL**, Beach MC, Berger ZD, Wu AW. Favorite patients in primary care. 2015 [in preparation].
5. **Lee JL**, Dy SM, Wu AW. Patient satisfaction and provider use of cellphone, email, and text-messaging in primary care. 2015 [in preparation].

Abstracts

1. Choudhry NK, **Lee JL**, Agnew-Blais J, Shrank WH. A cross-sectional survey of drug-company sponsored pharmacy assistance programs. *Pharmacoepidemiology and Drug Safety* 2008; 17:S194.
2. Solomon DH, Rassen JR, Glynn RJ, **Lee JL**, Levin R, Schneeweiss S. The comparative safety of analgesics in older adults with arthritis. *American College of Rheumatology* 2009; 10 :S838.
3. Polinski J, Patorno E, Desai A, Liu W, Kamatkar S, Palmsten K, **Lee JL**, Gagne J. Drug burden as a predictor of adherence to a newly prescribed statin. *Pharmacoepidemiology and Drug Safety* 2010; 19: S57.
4. **Lee, JL**. Preferences and concerns around using internet online communications to manage chronic conditions [Podium presentation]. Agency for Healthcare Research & Quality National Research Service Award Trainee Conference. San Diego, CA. 2014.
5. **Lee JL**, Choudhry NK, Matlin O, Brennan TA, Shrank WH. Preferences and concerns around using internet online communications to manage chronic conditions [Poster presentation]. AcademyHealth Annual Research Meeting. San Diego, CA 2014.
6. **Lee JL**, Dy SM, Kravet SJ, Ashar BH, Nesson T, Wu AW. "Doctor- What's your email address?" Cross-sectional survey results on use of cellphone, email, and text-messaging in primary care [Poster presentation]. Primary Care Consortium Retreat. Baltimore, MD 2015
7. **Lee JL**, Beach MC, Wu AW. "Like Having A Favorite Child?" Primary Care Physician Experiences with Favorite Patient [accepted poster presentation]. Society of General Internal Medicine Annual Meeting. Toronto, CA 2015.
8. **Lee JL**, Beach MC, Wu AW. Why Some Patients Can Email Their Doctors and Others Can't [accepted poster presentation]. Society of General Internal Medicine Annual Meeting. Toronto, CA 2015.
9. **Lee JL**, Dy SM, Wu AW. Patient Satisfaction and Provider Use of Electronic Communication [accepted poster presentation]. AcademyHealth Annual Research Meeting. Minneapolis, MN 2015.

Letter

Lee JL, Wu AW. Reality Check Please: Push Back on Professional Policy for Social Media [letter]. 2013 *Annals of Internal Medicine* 2013;159(2): 158.

Thesis

1. **Lee JL**. Three Generations of Shans: Negotiating state and family change in 20th century China. (Honors Thesis, Bowdoin College, 2007).
2. **Lee JL**. Cellphone, Email, and Text Messaging in Patient-Provider Communication. (Doctoral Thesis, Johns Hopkins Bloomberg School of Public Health, 2015).

EDUCATIONAL ACTIVITIES

Classroom instruction at Johns Hopkins Bloomberg School of Public Health

Lead Teaching Assistant	Assessing Health Status & Patient Outcomes	2012-2014
Lead Teaching Assistant	Quality of Medical Care	2012-2014
Lead Teaching Assistant	Introduction to Health Policy	2014
Lead Teaching Assistant	Patient Safety in Developing Countries	2014
Lead Teaching Assistant	Patient Safety and Medical Errors	2014
Teaching Assistant	Public Health Policy & Policy Formulation	2013

Classroom instruction at Harvard T. Chan School of Public Health

Teaching Assistant	Economic Analysis	2010
Teaching Assistant	Public and Private Health Care Issues	2010

ORGANIZATIONAL ACTIVITIES

Editorial Activities

Ad hoc reviewer, Journal of Medical Internet Research	2015
Ad hoc reviewer, American Journal of Managed Care	2009, 2012, 2014
Ad hoc reviewer, BMC Health Services Research	2012

Professional Societies

Member, AcademyHealth	2011- Present
Seminar chair, AcademyHealth Johns Hopkins Student Chapter	2012

RECOGNITION

- Barbara Starfield Scholarship in Health Services Research (2014)
- National Research Science Award, institutional training grant from the Agency for Healthcare Research and Quality (2011-2013)
- Matilda White Riley Prize in Sociology and Anthropology for outstanding student research (2007)
- State of Maine Heart and Soul Award for exemplary leadership in service (2007)

- *Finalist*, National Howard R. Swearer Student Humanitarian Award (2007)
- Distinguished Community Service Award in Sociology and Anthropology (2007)
- General R.H. Dunlap Prize for best essay and personal evidence of service (2006)
- *Winner*, 2006 Edinburgh Poetry Slam
- Grant Recipient, Freeman Award for Study in Asia (2006)